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HIGH SCHOOL HANDBOOK

CONTAINING

COURSES OF STUDY

PRESCRIBED FOR THE

PUBLIC HIGH SCHOOLS

OF

NORTH CAROLINA

OFFICE OF THE SUPERINTENDENT OF PUBLIC INSTRUCTION
RALEIGH, AUGUST, 1914

Revised 1915
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EDUCATIONAL BULLETIN XV

HANDBOOK FOR HIGH SCHOOL TEACHERS

CONTAINING

COURSES OF STUDY

PRESCRIBED FOR THE

PUBLIC HIGH SCHOOLS

OF

NORTH CAROLINA

IN ACCORDANCE WITH SECTION 3, CHAPTER 820 PUBLIC LAWS OF 1907,
AS AMENDED BY CHAPTER 149 OF THE PUBLIC LAWS OF 1913

AND

SUGGESTIONS TO HIGH SCHOOL TEACHERS

PREPARED BY

N. W. WALKER

*Professor of Secondary Education in the University of North Carolina
and State Inspector of Public High Schools*

FOURTH EDITION

OFFICE OF SUPERINTENDENT OF PUBLIC INSTRUCTION
RALEIGH, AUGUST, 1914

ARLORAD ITROM YRABLL STATE

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INTRODUCTORY LETTER

In accordance with section 3, chapter 820, Public Laws of 1907, I have prescribed for the Public High Schools established under that act the following courses of study, carefully prepared by Mr. N. W. Walker, who, in accordance with the authority vested in me, has been appointed Inspector of Public High Schools.

J. Y. JOYNER,

Superintendent of Public Instruction.

RALEIGH, N. C.,
August 18, 1914.

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PREFACE

This pamphlet containing the courses of study for the Public High Schools and some suggestions to teachers has been prepared at the request and under the direction of Superintendent Joyner.

The courses of study indicate the scope of work to be done, and the suggestions call attention to the principal points of attack and emphasize the main lines of progress. It is not expected that either the courses of study or the suggestions shall be followed so slavishly as to rob teacher or principal of all spontaneity and originality. Both are intended to be helpful rather than burdensome or obstructive.

In deciding which curriculum his school shall adopt, whether the Classical, the Latin-Scientific, the Modern Language, the Country-Life, or one planned according to the suggestions on pages 19-21, the principal must take into consideration the number of teachers at his command and their qualifications, the equipment of his school, the needs and demands of the community, and other local conditions. In this matter, as in all other matters pertaining to the organization of the high school, the Department of Public Instruction and the High School Inspector are always ready and willing to offer further suggestions for the guidance of the principal and to render him any assistance he may need.

The term *year* as used throughout this pamphlet means nine school months, or thirty-six weeks, and the courses have been planned to cover that period of time. The word *term*, as, first term, second term, means four and one-half school months, or eighteen weeks. The figures set opposite the subjects in the courses on pages 15, 16, 17, and 18, indicate the number of forty-minute *recitation periods* a week in those subjects. In schools where the classes are very small the recitation period may, if necessary, be shortened to thirty minutes.

Some of the better text-books in the several subjects have been suggested from which principals may make a choice. Of course there are many other excellent texts, but to include a complete list of them here is neither practicable nor desirable. Principals wishing to use other books than those listed should get the approval of the State Superintendent of Public Instruction.

It may be well to caution principals against three very common errors which are made in many high schools: (1) Do not attempt to crowd into one curriculum too many subjects. (2) Do not put upon teachers more periods of work than they can handle thoroughly and well. (3) Do not advance the students from year to year until they have been well grounded in the studies pursued, and then do not advance them with such inflated grades of scholarship as 99 or even 95. Few high school students are able to make such grades, and to grade them in this manner simply gives them a false standard of scholarship and causes them to place too high an estimate upon their own ability. To develop in the student such an attitude of mind regarding scholarship in general and his own ability in particular is indeed very hurtful to him.

In all his work, whether it pertains to organization, administration, or actual instruction, the principal must remember that, though much is re-

quired of him, the impossible is neither expected nor demanded of him. Let him also remember that it behooves him to hold up before the community correct ideals of the High School and the work it ought to accomplish.

N. W. W.

NOTE.

During the current school year the Handbook will undergo a thorough revision. The revised and enlarged edition will appear in the spring in ample time for any changes or improvements it may contain to be incorporated in the high school catalogues and other announcements for the ensuing year.

It is our earnest desire to make the Handbook as genuinely helpful to the high school teachers of the State as it is possible to make it. To this end everyone interested in our high school development is asked, and is cordially invited, to assist in the revision, to the extent of sending directly to the High School Inspector criticisms and suggestions looking to improvement in any particular. High school principals and teachers especially, can be of incalculable assistance if they will only bear this in mind during the next few months with a view to coöperating with the High School Inspector as just suggested. The test of the Handbook's worth must after all be made by the principals and teachers who make use of it. We wish, to be sure, to make it sound in theory and at the same time to make it embody the best experience of our own high school teachers. There should be no conflict between sound theory and sound practice. We earnestly hope that principals, teachers, and others will be good enough to let us know from their own experience wherein changes are necessary or improvements can be made.

A special pamphlet containing the outline courses in agriculture for the farm-life school departments has been issued from the State Department of Education. Any high school principal expecting to introduce courses in agriculture, whether there is a farm-life school department in connection with his school or not, should write for a copy of this bulletin.

CHAPTER I.

THE ORGANIZATION AND MANAGEMENT OF THE HIGH SCHOOL

ORGANIZATION NECESSARY.

Every institution, whatever its function, that can lay any claim to efficiency, proceeds in its work according to a definite and systematic plan. Otherwise confusion and chaos reign where there should be system and order. To start out blindly without any plan for the year's work is sure to entail much waste of time and effort on the part of both teachers and pupils that results in no little injustice to both.

GET ACQUAINTED WITH THE COMMUNITY.

But before the principal can plan wisely he must know the local school conditions in the community he is to serve. And he should not wait until the opening day of school to get this knowledge. He should by all means go to the community in which he is to teach at least one week (two weeks ahead would be much better) before the high school is to open. He should look up all records and reports left by the principal who has preceded him and through these acquaint himself with the internal conditions of the school. He should acquaint himself, too, with the external conditions through the school committee, the county superintendent, and citizens. Proceeding in this manner, he is sure to impress school officials and patrons with the fact that he is in earnest and that he has the school interests at heart. Thus will he be likely to secure the support and the coöperation of all concerned. Finding his school work bristling with problems, he will need this coöperation in his efforts to solve them.

PLANNING THE YEAR'S WORK.

After getting an intelligent grasp of the situation, he is ready to work out his courses of study and to plan his year's work. In deciding upon his curriculum the principal must, on the one hand, take into consideration the local conditions and demands and the means placed at his disposal for meeting them; and, on the other hand, he must have regard for the State's requirements of the high schools to which it renders aid.

THE CURRICULUM.

If the principal himself is the only high school teacher, he may plan for a two-year course; if he has an assistant teacher who is to give one-half of her time to the high school and one-half to the elementary school, he may plan for a three-year course; if he has an assistant teacher who is to give her entire time to the high school, he may plan for a four-year course. Two years of the high school course is all that one teacher can handle with any degree of satisfaction at all, and that much is all that the State expects or permits (except by special permission). The two-teacher high school offering a four-year curriculum, with the required number of recitation periods, even of insufficient length, has to confine itself to just one curriculum with no opportunity for electives. A standard high school properly organized to give

a single curriculum, with recitation periods of adequate length, should have three teachers devoting their entire time to high school instruction. But whatever the number of teachers and whatever the curriculum offered, the teachers should not be burdened with too much work, nor should the curriculum be too crowded. To fall into the error of doing either simply means to decrease the efficiency of the school.

WHERE THE HIGH SCHOOL WORK BEGINS.

The public high school in North Carolina is based upon an elementary school of seven grades. The four-year high school course therefore includes the eighth, ninth, tenth, and eleventh grades, and in the high school these grades are designated as first, second, third, and fourth years respectively. No part of the work outlined for the seven elementary grades can be counted as high school work, nor will any of the books adopted for use in the seventh grade, or in any grade below the seventh, be accepted as high school texts.

For the convenience and guidance of teachers and principals in planning their work for the first year, the course of study as outlined for the seventh grade of the elementary school, together with the books adopted for use in that grade, is given herewith. The outline course for all the elementary grades is printed in Educational Bulletin VIII, a copy of which every high school principal at least should procure.

SEVENTH GRADE.

(Outline of Work, and Adopted Books.)

I. SPELLING:

1. Review work of previous years.
2. Review A Spelling Book, Parts V and VI, or Reed's Word Lessons.

II. READING:

1. Heart of Oak Books, VI.
 2. Brooks' Story of Cotton.
 3. Irving's Rip Van Winkle.
 4. Warren's Stories from English History.
- See *How to Teach Reading*.

III. LANGUAGE:

1. Oral and written reproduction of stories.
 2. Copying and dictation.
 3. Other formal work—Essential Studies in English II.
- See *Suggestions for Language Teaching*.

IV. DRAWING:

1. Use Progressive Drawing VII.
2. Let the children do considerable work in drawing as an aid to the work in geography, agriculture, history, etc.

V. HISTORY:

1. Our Republic, completed. See *Outline in History*, Part II.
2. Peele's Civil Government.

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VI. ARITHMETIC:

1. Review of work of previous year.
2. Milne's Progressive Arithmetic, Book III, completed, omitting pp. 116-134. See *Outline in Arithmetic*.

VII. PHYSIOLOGY:

Ritchie's Primer of Sanitation.

VIII. GEOGRAPHY:

Dodge's Comparative Geography, pp. 201-333. See *Outline in Geography*.

IX. AGRICULTURE:

See *Suggestions for Teaching Agriculture*. (As outlined in Educational Bulletin VIII, containing the outline course of study for the elementary Schools.)

X. WRITING:

Copy-books VII and VIII.

THE DAILY PROGRAM.

If the work of the school is to proceed in an orderly fashion, it is necessary that a definite daily program of recitations be carefully arranged and closely followed. A good daily program rigidly adhered to prevents serious waste of time and energy on the part of both teacher and pupil; it prevents useless confusion and worry; it helps to develop the habit of promptness; it enables the teacher to make the most effective use of the time at his disposal; and, thus conserving time and energy, it becomes an indispensable aid toward securing a maximum of efficiency in the work of the school.

And again, the best index to the school's internal organization is its daily program; for it reveals at a glance the strength and the weakness of any school. It indicates at once the wealth or the poverty of the curriculum, the subjects of study that receive most emphasis and those that are neglected, the number of teachers and the subjects they teach, the time allotment and the correlation of studies, the study periods and the recitation periods for each class, and the sequence of studies in both the daily and the yearly schedule. Second only to the quality of the teaching, these are the considerations that determine the "total efficiency of the school."

In planning the daily program an effort should be made (1) to have for each pupil and each class alternating periods of recitation and study; (2) to place the more weighty subjects—those requiring most thought and energy—at those periods of the day when the mind is most active and most retentive; (3) to distribute the work of each class as evenly as possible throughout the week; (4) to leave, even in a crowded program, a few open periods, particularly the last period on Friday.

In small high schools with only one or two teachers it will be practicable in some instances to combine two classes (say I and II, or II and III, or III and IV) in such subjects as literature and history, and thus save a good deal of time which may be used to advantage in lengthening recitation periods. Other possible combinations might be made in science and in the third- and fourth-year Latin. If such a plan is adopted, yearly alternation

of subjects will have to be provided for. And of course, care would have to be taken to combine classes in those subjects whose position in the course is largely a matter of arbitrary choice.

ADMISSION AND CLASSIFICATION OF PUPILS.

No iron-bound rules to be followed without variation can be laid down for the guidance of the principal regarding the admission and classification of pupils. Some general principles, however, may be established and a few suggestions made which may be helpful.

The public high school in North Carolina is based upon a seven-grade elementary school course¹ which the pupil is supposed to have completed before applying for admission to the high school. The average pupil, then, with fair opportunities, ought to be ready to enter the high school at about thirteen years of age. A pupil under this age should not be admitted, unless he has satisfactorily completed the elementary school course. But there will be many applying for entrance who have not had even fair elementary school advantages, some of whom are too old to go back to the lower school with profit, and others who have, after a fashion, finished the elementary course but are irregularly and poorly prepared—well up, perhaps, in a few subjects but miserably behind in others. It is in connection with the admission and classification of such pupils that some of a principal's puzzling problems come.

The pupils entering the high school may be divided with respect to preparation into four general classes: (1) those who have come up through the elementary school operated in connection with the high school; (2) those who have come up through the elementary schools, of varying degrees of efficiency, in other parts of the county; (3) those who are over age yet have not completed the elementary school course; (4) public school teachers. It is best to discuss each class separately.

(1) If the principal has his elementary school properly articulated with his high school and the two schools well organized, pupils from the elementary school will be regularly admitted to the high school upon the completion of the elementary school course as outlined by the State Department. The admission and classification of this class of pupils ought to present no serious difficulty.

(2) Pupils coming from other elementary schools may be admitted by examination, by certificate from a former teacher, or otherwise, as the County Board of Education and the County Superintendent may direct. Some of these pupils will doubtless have to review certain grammar school subjects. If so, this review work must be done in the lower school, except in cases of one or two subjects like grammar and arithmetic, which may be reviewed in the high school as a regular part of the high school course.

(3) In all our country high schools there will be many pupils of a third class, pupils, say, from fifteen to twenty years old, who have not completed even an elementary school course. Judged merely upon scholarship, many of these pupils are not *prepared* for anything. Yet it is from this class that many of the most earnest, most ambitious, and most satisfactory pupils come. They should be admitted and encouraged, for it is perhaps their

¹ This course is issued in pamphlet form (Educational Bulletin viii) from the State Department, and may be had from the County Superintendent. The principal should have a copy of this pamphlet always at hand.

last chance to get schooling of any sort. They are too old to be classed with elementary pupils, and in many cases it would be disastrous to send them back to the lower school. The high school must take them and do the best it can for them.

(4) There will be no difficulty about admitting pupils of the fourth class. Those holding public school teachers' certificates must be admitted and classified as high school students whatever may be their studies. Classes three and four should be classified as suggested below.

Pupils in the high school should be classified as *First-Year*, *Second-Year*, *Third-Year*, and *Fourth-Year* pupils. It is possible that certain pupils in the grammar school grade just below the high school may be able to take up one or two subjects in the high school, and there is no harm in allowing this to be done in some cases. But such pupils must not be counted as high school pupils unless they are *bona fide* high school students, actually taking a majority (at least twelve periods a week) of the work prescribed for the first year of the high school. Irregular pupils, to be classed as *Second-Year* pupils, must have completed a majority (at least twelve periods a week) of the work prescribed for the first year of the high school course and must be pursuing a majority (at least twelve periods a week) of the work prescribed for the second year of the high school. And so on for the third and fourth years.

TEXT-BOOKS SUGGESTED.

Some of the better text-books which adequately cover the courses outlined in the several high school subjects have been suggested for the guidance of the principal. From the lists recommended he is supposed to make a choice. Of course there are many other acceptable texts; but to include a complete list of them seems neither practicable nor desirable. The lists suggested include most of those best suited to our needs and conditions. It may be well at this point to caution principals against an error that has been all too common, especially among inexperienced principals just out of college; namely, the practice of introducing into the high school texts they themselves have used in college. There has been entirely too much of this sort of "advancement," particularly in the classes in English. If the principal is not familiar with a few good high school texts in the several subjects of the course, he would do well to acquaint himself along this line before introducing into the high school texts of college grade.

RECORDS AND REPORTS.¹

Complete records of every school should be carefully kept and preserved, and it is the principal's duty to see that they are kept *in full* and turned over to the proper officials at the close of the school year. Blank books for keeping all required records are furnished by the State, and may be had from the County Superintendent. The keeping of accurate and full records is a matter to which some principals attach too little importance. But this is a matter of vital importance to the local community, the county, and the State, and the principal who disregards this part of his duty is both careless

¹ Separate records of the public high school and of the elementary school operated in connection with the high school must be kept, and separate reports rendered. The names of the pupils admitted to the high school and the names of those in the elementary school should be kept in *separate registers*. The State Department issues a special high school register in which the records of the High School Department must be kept.

and negligent, and furthermore, he is not coöperating as he should with the school officials. He may not see any immediate or even remote need for some of the information required to be recorded and reported; but there is a need for it, or there will be, else it would not be called for.

CLASSES OF REPORTS.

There are three classes of principal's reports¹ called for by the State Superintendent of Public Instruction: (1) *The Principal's Preliminary Report*, called for early in the fall; (2) *The Principal's Final Report*, called for at the close of the school; (3) *Special Reports*, which may be called for at any time during the session when there is need for definite, reliable, and up-to-date information bearing upon some specific problem of high school administration. Blanks for all reports are furnished by the State Department of Public Instruction, and may be had direct from the Department or from the County Superintendent.

All reports called for should be made *promptly* and *in full*. Otherwise there is useless and unnecessary delay and annoyance. All regular reports required by the State Department should be made in *triplicate*—one copy for the State Superintendent, one for the County Superintendent, and one to be filed with the other records of the school. *The Principal's Final Report* must be made immediately after the high school closes. The County Superintendent is instructed *not to sign* the principal's voucher for his last month's salary until this report has been properly made out and filed.

THE HIGH SCHOOL LIBRARY.²

A good library of select books should be established in connection with every high school. This is certainly a necessary part of the school's equipment, and it is indispensable if satisfactory work is to be accomplished. The ordinary rural school library, which most of the public high schools have, is valuable but it is not sufficient. It contains many volumes of standard literature which the high school needs and can use to decided advantage, but it is not intended to be a *working library* for the high school. It is not selected with this end in view. It must be very largely supplemented.

In addition to as many good books of general literature as the high school can secure, it should by all means have an unabridged dictionary, an encyclopedia, and other works of reference in history, biography, and science, books treating especially the subjects offered in the course of study, and a few standard professional books for teachers. It is not advisable for small libraries to buy complete sets of standard authors; a wiser and more economical plan is to get at first only their choice volumes. By following this plan small means may be made to go a long way toward building up a good though small, *select working library*.

¹ In addition to these, the County Superintendent may require the public high school principal to make a monthly report of the high school to him, along with the regular monthly report of the elementary school.

² Principals desiring expert information on the selection of books and how to purchase them to best advantage, the organization and management of the library, and other matters relating to library economy, will find *The North Carolina Library Commission* ever ready and willing to render any assistance they may desire. A letter to the Chairman, Dr. L. R. Wilson, Chapel Hill, N. C., or to the Secretary, Miss Minnie W. Leatherman, Raleigh, N. C., will receive proper attention. *The North Carolina Library Bulletin*, published quarterly by the Commission, will be sent free of cost to any library or high school principal applying for it.

A READING ROOM SHOULD BE PROVIDED.

If possible, a room should be set apart for the library and reading room. But whether this is done or not, the principal should take enough pride and interest in the library to see that proper cases with lock and key are provided, that the books are kept in good order and not allowed to be abused or destroyed. Books, pamphlets, magazines, and papers addressed to the high school should be placed in the high school library and kept there. The State Department of Public Instruction, the Historical Commission, the Geological and Economic Survey, all send out many valuable publications which may be had for the asking.

If the principal will only make a little effort to get a library, if his school has none, or to supplement that which it may have, he will usually find the people of the community ready to respond to his appeal for assistance.

THE RELATION OF THE ELEMENTARY SCHOOL TO THE HIGH SCHOOL.

The public high school has a vital organic relation to the public elementary school below it, and this relationship must never be lost sight of. Particularly is this true of the elementary school which is operated in connection with the public high school. If either the public high school or the public elementary school is to be made really efficient, the other must be made reasonably so. It is perfectly plain that the two must develop together. Yet, notwithstanding this fact, the public high school and the public elementary school, which may be conducted in the same building with the high school, are legally constituted two separate and distinct schools. The one belongs to the county, and is open, free of tuition, to all pupils of high school age residing in the county; the other is purely local, drawing its patronage only from the contiguous territory. The one is responsible to the county and the State; the other, to the local community and the county. It ought, then, to be perfectly plain that *no part of the public high school money from any source can be used directly or indirectly for the elementary school.* The public high school fund is apportioned for a specific purpose, and if it is not used for that purpose, and that purpose only, *it may be withdrawn.* This, of course, is a matter that directly concerns the school committee, but it is well for the principal to take cognizance of it, since he is so often called upon by the committee to give advice and to offer suggestions.

THE HIGH SCHOOL PRINCIPAL MUST NOT TEACH IN THE ELEMENTARY SCHOOL
THOUGH HE MAY SUPERVISE IT.

Although the public high school principal *must not teach in the elementary school*, the law allows him to serve as head of the two schools in order that he may render whatever aid he can to the elementary school in the way of supervising it, disciplining it, and directing it, to the end that it may become more efficient. This is a point that some young principals just beginning the public high school work, and some school committeemen, as well, fail to understand. And so occasionally an effort is made to have the principal do a part of the elementary school work; especially is this true in small high schools that have in connection with them elementary schools whose grades are crowded. *Unless there are high school pupils enough in school*

to occupy the time of one teacher, then that high school has been wrongly located and should be moved to some point in the county where a sufficient number of high school pupils can be assembled. Any attempt on the part of a high school committee to use a part of the principal's time, or a part of the time of any other teacher who is employed to do high school work and paid out of the high school fund, is to divert a proportionate part of the high school money from its legitimate use and to put it to an illegal use; and any such attempt renders the school liable to having the high school apportionments from both State and county withdrawn by the State Board of Education.

CERTIFICATES OF PROMOTION AND CERTIFICATES OF GRADUATION.

The problem of promotion involves the same principles as that of classification which has been discussed above. Pupils who complete in a satisfactory manner the full work prescribed for any year below the fourth in the high school may be given a certificate of promotion to the next year above. Irregular pupils may be given a certificate showing the amount of work actually accomplished. The school records should show the number and character of certificates issued and to whom they are issued. Pupils who have completed in a satisfactory manner all of the prescribed four-year curriculum may be awarded a certificate of graduation. Certificates of graduation should not in any case be awarded by schools offering only two years or three years of the high school course. The full curriculum covers four years of work, and it should be the ambition of every high school to work up to the point where it can give the full four years work, and give it without pretense or sham. If the pernicious practice of awarding certificates of graduation at the end of a two-year or a three-year course is once established by a school, the community will become satisfied with that standard and will make little, if any, effort to attain a higher standard. The school must set its own standards in this respect, and the community will ultimately come to appreciate them.

CHAPTER II.

HIGH SCHOOL CURRICULA

A. CLASSICAL CURRICULUM.¹

FIRST YEAR.	Recitations per week.
1. Arithmetic and Algebra.....	5
2. English History	3
3. English Grammar, Composition and Literature.....	5
4. Latin	5
5. Introduction to Science ²	3
SECOND YEAR.	
1. Algebra	5
2. Ancient History to 800 A. D.....	3
3. English Composition and Literature.....	5
4. Latin	5
5. Physical Geography	3
THIRD YEAR.	
1. Algebra and Plane Geometry.....	5
2. Mediæval and Modern History.....	3
3. English Composition and Literature.....	5
4. Latin	5
5. Greek	5
FOURTH YEAR.	
1. Geometry and Advanced Arithmetic.....	5
2. American History and Civics (4) and N. C. History (1).....	5
3. English Composition, Rhetoric, and Literature.....	5
4. Latin	5
5. Greek	5

¹ Few schools will need this curriculum, for the reason that Greek is asked for in so few places. This is the sort of curriculum (with a few additions) designed to prepare students for the old A.B. college curriculum. It has been superseded in our schools in most cases by the Latin-Scientific Curriculum as a vehicle of entrance to college.

² Good elementary books for this introductory work are Bert's *Steps in Scientific Knowledge* (Lippincott), and Clark's *General Science* (American Book Co.).

B. LATIN-SCIENTIFIC CURRICULUM.¹

FIRST YEAR.

Recitations per week.

1. Arithmetic and Algebra.....	5
2. English History.....	3
3. English Grammar, Composition, and Literature.....	5
4. Latin	5
5. Introduction to Science ²	3

SECOND YEAR.

1. Algebra	5
2. Ancient History to 800 A. D.....	3
3. English Composition and Literature.....	5
4. Latin	5
5. Physical Geography.....	3

THIRD YEAR.

1. Algebra and Plane Geometry.....	5
2. Mediæval and Modern History, or a science continued.....	3
3. English Composition and Literature.....	5
4. Latin	5
5. French or German.....	5

FOURTH YEAR.

1. Geometry and Advanced Arithmetic.....	5
2. American History and Civics (4) and N. C. History (1).....	5
3. English Composition, Rhetoric, and Literature.....	5
4. Latin	4
5. French or German (continued).....	4
6. Physics, Chemistry, or Agriculture.....	3

¹ This is the curriculum that most schools attempt to carry out whose main purpose is to prepare students for college entrance. This is the curriculum that fits students for the present A.B. curriculum in our standard colleges. Some of the subjects included here are not required nor credited for college entrance. This is also regarded as a "general culture" curriculum.

² See note 2 on page 15

C. MODERN LANGUAGE CURRICULUM.

FIRST YEAR.	Recitations per week.
1. Arithmetic and Algebra.....	5
2. English History.....	3
3. English Grammar, Composition, and Literature.....	5
4. French or German.....	5
5. Introduction to Science ¹	3
SECOND YEAR.	
1. Algebra	5
2. Ancient History to 800 A. D.....	3
3. English Composition and Literature.....	5
4. French or German (continued).....	5
5. Physical Geography.....	3
THIRD YEAR.	
1. Algebra and Plane Geometry.....	5
2. Mediæval and Modern History	3
3. English Composition and Literature.....	5
4. French or German (continued third year).....	5
5. German or French (beginning).....	5
FOURTH YEAR.	
1. Geometry and Advanced Arithmetic.....	5
2. American History and Civics (4) and N. C. History (1).....	5
3. English Composition, Rhetoric, and Literature.....	5
4. French or German (continued fourth year).....	5
5. French or German (continued second year).....	5

¹ See note 2, on page 15.

D. COUNTRY LIFE CURRICULUM.

FIRST YEAR.	Recitations per week.
1. English Grammar, Composition and Literature.....	5
2. English History.....	3
3. Mathematics—Farm Arithmetic and Algebra.....	5
4. Introduction to Science ¹	3
5. Country Life Subjects.....	5
Cooking, Sewing, Homemaking (girls).	
Elementary Agriculture and Farm Carpentry (boys).	
 SECOND YEAR.	
1. English Composition and Literature.....	5
2. General History.....	3
3. Mathematics—Farm Accounts and Algebra.....	5
4. Science, Physical Geography.....	3
5. Country Life Subjects.....	5
Cooking, Sewing, Homemaking (girls).	
Agriculture and Farm Carpentry (boys).	
 THIRD YEAR.	
1. English, Composition and Literature.....	5
2. General History, or Rural Economics and Sociology.....	3
3. Mathematics, Plane Geometry (or a foreign language).....	5
4. Science, Physics.....	5
5. Country Life Subjects.....	5
(See Outline in Special Bulletin on Farm-Life Subjects.)	
 FOURTH YEAR.	
1. English, Composition, Rhetoric, and Literature.....	5
2. American History and Civics.....	5
3. Mathematics, Solid Geometry (or a foreign language).....	5
4. Chemistry, Biology, or Botany.....	5
5. Country Life Subjects.....	5
(See outline in Special Bulletin on Farm-Life Subjects.)	

¹ See note 2, on page 15.

E. CURRICULA BASED UPON THE UNIT SYSTEM.

There will doubtless be high school principals who will desire more flexible curricula than those outlined above. Therefore, the following are suggested. If he prefers to do so, the principal may adopt one of these curricula and then choose the elective work according to the qualifications of his teachers or the demands of his community. The 8-unit curriculum is for the school having only one high school teacher, the 12-unit curriculum for the school having two teachers, and the 16-unit curriculum for schools having two or more teachers.

In the 16-unit curriculum it will be seen that there are 6 elective units. These might be made up of 4 units of Latin and 2 of Greek; or, 3 of Latin, 2 of French or German and 1 of Science, English or History; or, 2 of French, 2 of German, and 2 of Science or History; or, the six units might be made up in some other combination of this sort. And so may the 2 elective units in the 8-unit curriculum be chosen, and the 4 elective units in the 12-unit curriculum.

SUGGESTED CURRICULA.¹

TWO-YEAR CURRICULUM.

Required Studies.

English	2 units.
Mathematics	2 units.
History	1 unit.
Science	1 unit.

<i>Elective</i>	2 units.
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THREE-YEAR CURRICULUM.

Required Studies.

English	3 units.
Mathematics	3 units.
History	1 unit.
Science	1 unit.

<i>Elective</i>	4 units.
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FOUR-YEAR CURRICULUM.

Required Studies.

English	3 units.
Mathematics	3 units.
History	1 unit.
Science	1 unit.
Latin, French, or German	2 units.

<i>Elective</i>	6 units.
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¹ Most of the 16-unit curricula in our high schools contain about one unit of grammar and one of arithmetic, which are not counted for credit for college entrance; thus, graduates from such schools get about 14 units of credit for college entrance.

HIGH SCHOOL SUBJECTS.

AND THEIR TIME ALLOTMENT AND VALUATION UPON THE UNIT BASIS.

The studies that may be pursued in the foregoing curricula are here given a valuation based upon the *unit* system. Both the amount of work that may be done in a subject and the time devoted to it are indicated, and upon these two things is the *unit* reckoned. For instance, the time to be devoted to 4 books of Cæsar is one full school year of nine months of 5 forty-minute recitation periods a week. If a school gives a full year to this subject but has only 3 forty-minute periods a week, then the work of that school in Cæsar will be valued at 3-5 of a unit. Or, suppose a class in English history meets 5 times a week for the school year of nine months but has recitation periods of only thirty minutes each, then the work of that class will be valued at 3-4 of a unit. Or, again, suppose a school devotes 5 forty-minute periods a week to the study of Physics but has a term of only six months, then the work of that school in Physics will be valued at 2-3 of a unit.

Hence, it will be seen that a *unit* of work, so far as the time element is concerned, means 5 forty-minute recitation periods a week for a school year of nine months or thirty-six weeks. In a well organized school a pupil's total work for a school year of 36 weeks counts for about 4 *units*. In other words, a *unit* represents approximately one-fourth a good year's work.

English.

Grammar, Composition, and Rhetoric.....	1	unit.
Literature for Reading and Practice.....	1½	units.
Literature for Study and Practice.....	1½	units.

Mathematics.

Advanced Arithmetic	1	unit.
Algebra—(a) to Quadratics	1	unit.
Algebra—(b) Quadratics, Binomial Theorem, and Progressions	½	unit.
Plane Geometry	1	unit.
Solid Geometry	½	unit.

History.

Ancient History to 800 A. D.	1	unit.
Mediæval and Modern History	1	unit.
English History	1	unit.
American History and Civics	1	unit.

Latin.

Grammar and Composition	1	unit.
Cæsar, 4 Books	1	unit.
Cicero, 6 Orations	1	unit.
Vergil, 6 Books	1	unit.

Greek.

Grammar and Composition	1	unit.
Xenophon, 4 Books of the Anabasis.....	1	unit.

Modern Languages.

Elementary German	2	units.
Elementary French	2	units.

Science.

Physical Geography	$\frac{1}{2}$	unit.
Physics	1	unit.
Botany	1	unit.
Chemistry	1	unit.
Agriculture	1	unit.
Elementary Zoölogy	$\frac{1}{2}$	unit.
Advanced Physiology	$\frac{1}{2}$	unit.

CHAPTER III.

THE COUNTRY LIFE SUBJECTS

To carry out the four-year country life curriculum, three teachers, at least, will be necessary. There should be one teacher of cooking, sewing, home-making, etc, for the girls; one teacher of agriculture and other country-life subjects for the boys (these two could also take care of the mathematics and science), and one for English, history, and allied subjects. Teachers of special training should, by all means, be secured. And, of course, some equipment necessary for the effective teaching of the country-life subjects would have to be provided.

It is not deemed advisable to work out the country-life curriculum at this state of our development in any great detail, for the simple reason that nobody knows in detail just what is best to be done and just what can be done in every school. But with trained teachers working at the task, the details will take care of themselves, and proper adjustments will be made in due course of time. The development of such a curriculum is after all a matter of evolution, which means that we must experiment, and adapt, and adjust, and re-direct as this phase of our school work develops. Here is a supreme task in school organization and administration for our high school principals and special teachers. Whatever progress we shall make in this direction must of necessity be based on their practical experience and success.

For reasons well known to all who are familiar with our educational conditions, the courses in science in our rural high schools have of necessity been rather meagre up to this time. The function and educational value of science in all well organized courses of study are recognized, but it has not yet been practicable to give science studies the place in our schools that their importance warrants. We all realize that this side of our high school work must be emphasized more, and an effort made to strengthen and improve it as rapidly as teachers trained to do the work can be supplied. Principals are urged, therefore, to encourage the trustees of their schools to make adequate provision for the teaching of science. School officials must be made to see that this phase of school work is as important as any other, and that laboratory room and apparatus are a necessary part of the school's equipment.

Special chapters on Physical Geography, Physics, and Chemistry appear in this edition of the handbook. Outline courses in Agriculture and Domestic Science are published in a special pamphlet which will be sent to all high school principals.

SOME HELPFUL BOOKS SUGGESTED.

A few books for class use, for teachers, and for general reading that will be found helpful to teachers of country-life subjects are listed below. All these, and many others besides, should be in every rural high school library. This is merely a suggestive list, and principals and teachers of these special subjects need not be bound by it. If there are other books better adapted to their needs and purposes, permission may be given by the State Superintendent of Public Instruction to make use of them.

1. BOOKS DEALING WITH GENERAL ASPECTS OF COUNTRY LIFE.

(For the Teacher and for General Reading).

Bailey—*The Country Life Movement* (Macmillan).Bruère—*Increasing Home Efficiency* (Macmillan).Butterfield—*Chapters in Rural Progress* (Univ. of Chicago Press).Butterfield—*The Country Church and The Rural Problem* (Univ. of Chicago Press).Commission on Country Life, *Report of* (Sturgis-Walton Co.).Gregory—*Checking the Waste* (Bobbs Merrill).Hodge—*Nature Study and Life* (Ginn).McKeever—*Farm Boys and Girls* (Macmillan).

2. BOOKS DEALING WITH THE COUNTRY SCHOOL AND ITS RELATION TO COUNTRY LIFE.

(For the Teacher and for General Reading).

Betts—*New Ideals in Rural Schools* (Houghton Mifflin).Betts and Hall—*Better Rural Schools* (Bobbs Merrill).Chamberlain—*Standards in Education* (American Book Co.).Cubberly—*Changing Conceptions of Education* (Houghton Mifflin).Cubberly—*The Improvement of Rural Schools* (Houghton Mifflin).Cubberly—*Rural Life and Education* (Houghton Mifflin).Culter and Stone—*The Rural School: Its Methods and Management* (Silver, Burdette & Co.).Foght—*The American Rural School* (Macmillan).Kern—*Among Country Schools* (Ginn).Leavitt—*Examples of Industrial Education* (Ginn).Perry—*A Wider Use of the School Plant* (Charities Publication Committee, New York).

3. ECONOMICS AND SOCIOLOGY.

(For Class use, for the Teacher, and for General Reading).

Bullock—*The Elements of Economics* (Silver, Burdette & Co.).Carver—*Principles of Rural Economics* (Ginn).Ellwood—*Sociology and Modern Social Problems* (Amer. Book Co.).Raper—*Wealth and Welfare* (Macmillan).

4. ELEMENTARY AGRICULTURE.

(For Class use and for General Reading).

Buffum and Deaver—*Sixty Lessons in Agriculture* (Amer. Book Co.).Burkett, Stevens, and Hill—*Agriculture for Beginners* (Ginn).Davenport—*Education for Efficiency* (Heath).Davis—*Productive Farming* (Lippincott).Dugger—*Agriculture for Southern Schools* (Macmillan).Jackson and Dougherty—*Agriculture Through the Laboratory and School Garden* (Orange, Judd Co.).Mayne and Hatch—*High School Agriculture* (Amer. Book Co.).Warren—*Elements of Agriculture* (Macmillan).Wilkinson—*Practical Agriculture* (Amer. Book Co.).

5. DOMESTIC SCIENCE.

(For Class use).

Bailey—*Domestic Science: Principles and Application* (Webb Pub. Co., St. Paul).Carpenter—*Industrial Reader—Foods and Their Uses* (Scribner).

6. FARM ARITHMETIC AND ACCOUNTS.

(For Class use).

Burkett and Swartzel—*Farm Arithmetic* (Orange Judd Co.).Calfee—*Rural Arithmetic* (Ginn).

7. ANIMAL HUSBANDRY.

(For Class use).

Harper—*Animal Husbandry for Schools* (Macmillan).Plumb—*Beginnings in Animal Husbandry* (Webb Pub. Co., St. Paul).

8. CHEMISTRY.

(For Class use).

Allyn—*Elementary Applied Chemistry* (Ginn).

(See list of books in The Chapter on Chemistry).

9. BOTANY.

(For Class use).

Andrews—*Practical Course in Botany* (Amer. Book Co.).Bailey—*Elements of Botany* (Macmillan).Leavitt—*Outlines of Botany* (American Book Co.).

10. SCHOOL GARDENING AND NATURE STUDY.

(For the Teacher and for General Reading).

Bailey—*The Nature Study Idea* (Doubleday, Page & Co.)Hemenway—*How to Make School Gardens* (Doubleday, Page & Co.).

11. VOCATIONAL GUIDANCE AND INSTRUCTION.

(For the Teacher and for General Reading).

Bloomfield—*The Vocational Guidance of Youth* (Houghton, Mifflin Co.).Münsterberg—*Vocation and Learning* (The Peoples Uni., St. Louis).Puffer—*Vocational Guidance* (Rand-McNally).Snedden—*The Problem of Vocational Education* (Houghton, Mifflin Co.)

12. MISCELLANEOUS.

Bailey—*Cyclopædia of Agriculture* (Macmillan). 4 vols. \$20.00 Reference work for the Library and for General Reading.

Bulletins issued by the State and National Departments of Agriculture, the A. & M. College, the Experiment Station, and the State Board of Health.

Macmillan's *Rural Science Series* (Macmillan). Many volumes dealing with the various phases of farm work and with the different aspects of country life.

Webb's *Farm Science Series* (Webb Pub. Co., St. Paul). Several volumes dealing with different phases of agriculture and farm work.

The Young Farmer's Practical Library (The Sturgis-Walton Co.).

See also books listed in the Chapters on Physical Geography, Physics, Chemistry, etc.

See also the Pamphlet containing the courses of study and lists of books for the farm-life schools.

CHAPTER IV.

ENGLISH

It is generally conceded today that an intelligent study of the English language and literature in the high school is, in its pedagogic importance, second to no study in the high school curriculum. It has at once disciplinary and cultural values which makes it a most effective instrument in the mental and moral development of youth. It offers most of the opportunities for mental training afforded by the study of any other language, and at the same time "introduces the pupil to the literature of his own tongue, which must always be the chief source of his own thought, inspiration, ideals, æsthetic enjoyment, and must also be the vehicle of his communication with his fellow-men." Hence, English is, or should be, broader in its appeal than any other subject of high school study. And yet, notwithstanding the pedagogical possibilities in English study, it is so handled in many of our schools as to produce results that are, to say the least, far from satisfactory.

There may be several reasons for the nebulous condition of English teaching in our secondary schools. The subject is broad, it is true, and methods widely differing are in use, but the chief reason for unsatisfactory results (excepting, of course, inadequate preparation of the teacher) lies not so much in the complexity of ways and methods as in the lack on the part of the teacher, of a *definite purpose* and a *clear aim*. Too often the teacher has in mind only the day's recitation without seeing its relation to the whole subject under consideration, or understanding how the lesson is going to aid, or can be made to aid, in the accomplishment of some larger purpose.

The teacher must ever bear in mind the two main objects of the high school course in English: (1) To cultivate in the pupil an appreciation of good literature, and (2) to develop in him the power to give his own thought adequate and correct expression. If the first object is attained, the student, before leaving the high school, will have developed a desire for good reading, will have gained some little acquaintance with a few of the easier masterpieces, and will have acquired the means of extending that acquaintance. In short, his mind will have become receptive to the beauties and truths of a great literature. If the second purpose is accomplished, we shall hear less complaint from college instructor and business man, both of whom are continually lamenting the fact that the high school student entering classroom and office lacks the ability to express his ideas in even tolerable English.

The course of study as outlined below includes grammar, composition, rhetoric, and literature.

GRAMMAR.

The course in grammar extends through the first year of the high school course. If, however, at the end of that time the principal finds that for any reason the pupils are not well grounded in the principles of the subject, he should have them to continue the study in connection with their work in composition and literature. Before leaving the high school the student should be able to explain the common grammatical relations of the sentence

as found in the prose and verse of standard literature. This much is expected of him and demanded of him, but it is not expected that time shall be wasted on difficult idioms and grammatical puzzles.

COMPOSITION.

Free expression must precede correct expression. Therefore, the teacher's first problem in composition work is to secure spontaneity in both oral and written discourse. The first year's work may well be directed mainly to this end. Frequent themes should be required, though not necessarily long ones, and they should be based very largely on the pupil's daily experience.

The paragraph is the unit of composition, and one of the best ways of learning to write, indeed the only way, is by the paragraph method. The student who has learned to write a good paragraph has won the battle in mastering English composition. There is no better method of self-discipline than the practice of reading a paragraph of good prose and then, with closed book, attempting to reproduce it. Teacher and student alike should remember that, after spontaneity has been secured, the main consideration is accuracy in details.

In marking and grading papers the teacher should only call attention to the errors by appropriate marks and leave them for the pupil's own investigation and correction. He should have a few simple marks to indicate the more common errors. These marks should be written in red ink on the margin opposite the line in which the error occurs. Errors found to be prevalent or typical should be made the subject of special study by the whole class in appropriate recitation.

RHETORIC.

A knowledge of rhetoric is of value only as it is related to the study of literature and composition. Hence, slavish adherence to a formal text-book on this subject must not be tolerated. Rhetoric and composition must not be dissociated. Familiarity with the principles of rhetoric should be developed gradually from the material found in literature and put into use in composition work by the pupil.

LITERATURE.

The course in literature here outlined represents all the more common forms or types of literary art, such as the drama, the lyric, the elegy, the epic, the ballad, the masque, the oration, the character sketch, the nineteenth century novel, the letter, and the essay. Thus ample room is allowed for the specialized study of these various literary types during the last two years of the high school course.

Teachers are urged to have their pupils memorize both prose and verse—not necessarily long selections, but many of the finer passages—and in every case to have them reproduce in writing the memorized selections with scrupulous attention to details. If the practice is kept up of reproducing in written English what has been read or memorized, "the student will become almost independent of grammars and rhetorics. He will have learned English where the masters learned it; that is, at first hand." He will have, moreover, at his command many classic gems of thought which will be to him a source of pleasure and inspiration as long as he lives.

In his stimulating and suggestive little volume, *What Literature Can Do for Me*, Dr. C. Alphonso Smith expresses with rare beauty and force the true use of text and reference books in teaching and in studying English and voices an eloquent protest against a slavish adherence to them. He says:

"It is easy enough, however, to point to the right authors. It is easy to read them. More important than either is so to read them as to get power from their pages. There are thousands of readers of good literature whose power of self-expression shows no improvement from year to year. But it is well to remember also that whenever successful writers have expressed their indebtedness, whenever they have named the source or the first impulse from which their power came, it was always to literature they pointed us, never to a dictionary, or a grammar, or a rhetoric.

"Why? Are dictionaries, grammars, and rhetorics useless? By no means. They are useful as stepping-stones but not as final resting places. They are useful in calling attention to the speech of the masters, in telling us what to look for and what not to look for, in making the search interesting and the path straight. But whenever they satisfy or blunt our desire to go beyond them they are worse than useless; they rob rather than enrich. They are then like the bayous along the Mississippi. These streams flow from the great river instead of into it: they are tributaries turned wrong end foremost. When Goethe was accused of being a skeptic he replied that his was 'the active skepticism, whose sole aim is to conquer itself.' That is exactly the motive with which all language helps should be used. Your dependence on them should conquer itself as soon as possible. They should create a thirst, but this thirst should be not for more of them but for the speech of the masters from which they derive every jot and tittle of the authority that they possess."

In teaching literature it should be remembered always that the content is of more importance than the technical analysis. A firm grasp of the thought and meaning of the selection is the vital point at issue, and must precede real literary appreciation. Therefore, frequent tests should be made of the pupil's mastery of thought. Still, sight must not be lost of the fact that literature is one of the fine arts, and quite often the form in which it is cast is of equal importance with the thought itself.

Encourage free discussion of the selections read and studied. The more the students talk about what they read the greater will be their desire to read. There is a growing consciousness on the part of the adolescent that leads him to shrink from drawing attention to himself, particularly in the classroom. Much skill will be required of the teacher to counteract this tendency. The pupil must lose himself in the spirit of the selection even as the young child does in the fairy tale if the best results are to be obtained.

ADDITIONAL SUGGESTIONS.

1. Throughout the course instruction should be given in spelling. After the first year the teacher may or may not (as the principal deems best) use a text-book in this subject. The range of instruction should include the proper names in the literature read, the misspelled words in compositions, and in general all the words in the pupil's vocabulary. Suitable spelling books for high school use are *The High School Word Book*, by Sandwick and

Bacon (Heath), and *Common Words Commonly Misspelled*, by B. R. Payne (B. F. Johnson Pub. Co.). Another useful little book for high school use is Bechtel's *135,000 Words Spelled and Pronounced* (Jacobs).

2. Oral composition should find a prominent place in the English work of the high school. Once a week, or at least once every two weeks, the teacher should assign subjects or themes to the class to be presented orally. In presenting this work the class should observe the same principles they are required to observe in the written presentation. The theme should be presented in a conversational way, the student observing the natural order, the logical sequence, and choice of material. Such exercises develop the power of expression along with logical and continuous thinking. In presenting the composition orally, with no aid except a written outline, the student can present much more material by bringing in a large number of related details. In many ways such composition work is more valuable than the written because it gives the student power to use the same training in his other work.

3. The students should be taught how to use dictionaries, encyclopædias, and general works of reference. It is true that many of our schools are not at present equipped with such works of reference, but an effort should be made to supply them as soon as possible, and wherever they are found they should be used.

4. There should certainly be close correlation between English and the other subjects in the high school curriculum. Particularly is this true in literature, history, and geography.

5. Start a high school library as early as possible, and encourage the students in a systematic use of it. Talk to the classes occasionally about books they would likely enjoy, and they will be induced to read more for themselves. Try to secure for the library all the classics named in the *Reading and Study* groups at the end of this chapter. The classes in English ought to have access to all these masterpieces.

6. By all means establish a debating or literary society in connection with the school. It will prove to be an educational stimulus not only for the school but for the whole community. For this work a very helpful little book is Lyon's *Elements of Debating* (The University of Chicago Press). Assistance will be given by the North Carolina Debating Union, E. R. Rankin, Secretary, Chapel Hill.

OUTLINE COURSE IN ENGLISH AND SUGGESTED TEXTS.

FIRST YEAR.

Grammar, Composition, and Literature (5 periods).

GRAMMAR. A review of grammar. (Do not use for this purpose the textbook used in the grades below the high school.) Especial attention to the analysis of sentences and the application of the principles of grammar in composition. Punctuation, capitalization, and spelling.

Texts Suggested.

Stebbins's *Sentence Improvement—A Practice Book in Applied Grammar* (Sibley & Co.).

Smith's *Our Language—Grammar* (B. F. Johnson).

Gowdy's *English Grammar* (Allyn & Bacon).

Composition.—An excellent basal book for the first year's work in English is Briggs and McKinney's *A First Book in English Composition* (Ginn). The work in composition during this year should be directed mainly to securing spontaneity. An effort should be made to secure facility and some degree of accuracy in both oral and written expression. Attention should be given to distinctness of utterance, to pronunciation, inflection, and phrasing, and the pupil should be helped to overcome common errors of speech. But never let too constant attention to these details fetter spontaneity.

Literature.—The primary purpose of teaching literature in the first year of the high school is to arouse in the pupil a desire for good reading. He must be taught *what* to read and *how* to read. And, too, his power to form vivid mental pictures should be developed. The work should not become mechanical or distasteful, for, in either case, the chief end of the course would be defeated. Books of a wholesome interest should be selected. The pupil must not look upon the work in literature as a task. It can be made and should be made a genuine pleasure to him. The following classics are suggested:

For Reading:

Longfellow's *The Courtship of Miles Standish*.
 Irving's *Sketch Book* (at least five selections).
 Poe's *Raven*.
 Whittier's *Snowbound*.
 Macaulay's *Lays of Ancient Rome*.
 Other selections if time permits.

SECOND YEAR.

Composition and Literature (5 periods).

Composition.—Short themes throughout the year. Strive to develop in the student the power to express ideas with simplicity, accuracy, and fullness. Pay especial attention to the paragraph as the unit of composition, and study its structure with respect to unity, coherence, and emphasis.

Texts Suggested.

Briggs and McKinney's *A First Book in English Composition* (Ginn).
 Scott and Denny's *Elementary English Composition* (Allyn & Bacon).
 Keeler and Adams's *High School English* (Allyn & Bacon).
 Sykes's *Elementary English Composition* (Scribner).
 Lewis's *First Manual of Composition* (Macmillan).
 Brooks's *English Composition, Book I Enlarged* (American Book Co.).

Literature.—The general purpose in teaching literature in the second year is to increase the pupil's interest in good books, and to develop in him the habit and power of accurate thinking and a finer feeling for the beauty and truth of literature. He should be taught to discriminate and to compare, in a general way, literary types and values.

• *For Reading:*

Homer's *Odyssey* (some good translation).
 Palgrave's *Golden Treasury* (First Series, Books II and III).
 Hawthorne's *House of Seven Gables*.
 Parkman's *Oregon Trail*.
 Other selections if time permits.

THIRD YEAR.

Composition and Literature (5 periods).

Composition.—Continuation of the work as outlined for the previous year. Further study of the paragraph, with special attention to the topic sentence, connectives, methods of translation, methods of development, and greater insistence upon unity, coherence, and emphasis. Short themes of various literary types. Pay attention to the principles of rhetoric, but use no formal text in that subject alone.

Texts suggested.

Scott and Denney's *The New Composition-Rhetoric* (Allyn & Bacon).

Lewis's *Second Manual of Composition* (Macmillan).

Lockwood and Emerson's *Composition and Rhetoric* (Ginn & Co.).

Brooks's *English Composition, Book II* (American Book Co.).

Literature.—Stimulate a finer feeling for literary types and values. Continue the work as outlined for the preceding year. Pay some attention to literary history, but use no formal text in that subject except, perhaps, as a reference book or as parallel reading. Strive to develop insight and breadth of view, and show the application of the lessons of literature to the problems of life.

For Study:

Webster's *First Bunker Hill Oration*.

Washington's *Farewell Address*.

For Reading:

Shakespeare's *Julius Caesar*.

Coleridge's *The Rime of the Ancient Mariner*.

Lowell's *The Vision of Sir Launfal*.

Homer's *Iliad* (some good translation).

FOURTH YEAR.

Composition, Rhetoric, and Literature (5 periods).

Composition and Rhetoric.—Continue the work as outlined for the preceding year. Do not dissociate the work in composition and rhetoric from that in literature. Develop the power to reason soundly and to read critically. Demand more of the pupil in the way of argumentation, exposition, and description than in the preceding years. A review of the principles of unity, coherence, and emphasis in sentences, paragraphs, and the whole composition.

Texts Suggested.

Same as for preceding year, or one of the following:

Carpenter's *Rhetoric and English Composition* (Macmillan).

Spalding's *Principles of Rhetoric* (Heath).

Literature.—Continue along the lines suggested for the previous year. Teach the student to work from a definite outline.

For Study:

Macaulay's *Life of Johnson*.

Milton's *L'Allegro*, *Il Penseroso*, and *Comus*.

Shakespeare's *Macbeth*.

For Reading:

Shakespeare's *The Merchant of Venice*.

Scott's *Ivanhoe*.

Franklin's *Autobiography*.

COLLEGE ENTRANCE REQUIREMENTS IN ENGLISH.

For the guidance of principals who may wish to follow the recommendations of the National Conference on Uniform Entrance Requirements in English, the books and authors recommended for *Reading* and for *Study*, 1913 to 1915, are given below. The course suggested above, however, will meet the entrance requirements of the best colleges of America.

FOR READING, 1913-14-15.

Group I. (Two to be selected.)

(a) *The Old Testament*, comprising at least the chief narrative episodes in Genesis, Exodus, Joshua, Judges, Samuel, Kings, and Daniel, together with the books of Ruth and Esther; (b) Homer's *Odyssey*, with the omission, if desired, of Books I, II, III, IV, V, XV, XVI, XVII; (c) Homer's *Iliad*, with the omission if desired, of Books VI, XIII, XIV, XV, XVII, XXI; (d) Virgil's *Æneid*.

The *Odyssey*, *Iliad*, and *Æneid* should be read in English translations of recognized literary excellence.

Group II. (Two to be selected.)

Shakespeare's (a) *Merchant of Venice*; (b) *Midsummer Night's Dream*; (c) *As You Like It*; (d) *Twelfth Night*; (e) *Henry The Fifth*; (f) *Julius Cæsar*.

Group III. (Two to be selected.)

(a) Defoe's *Robinson Crusoe*, Part I; (b) Goldsmith's *Vicar of Wakefield*; (c) Scott's *Ivanhoe* (or *Quentin Durward*); (d) Hawthorne's *House of the Seven Gables*; (e) Dickens' *David Copperfield* (or *Tale of Two Cities*); (f) Thackeray's *Henry Esmond*; (g) Mrs. Gaskell's *Cranford*; (h) George Eliot's *Silas Marner*; (i) Stevenson's *Treasure Island*.

Group IV. (Two to be selected.)

(a) Bunyan's *Pilgrim's Progress*, Part I; (b) Addison's *Sir Roger de Coverley Papers*; (c) Franklin's *Autobiography* (condensed); (d) Irving's *Sketch Book*; (e) Macaulay's *Essay on Lord Clive* and *Essay on Warren Hastings*; (f) Thackeray's *English Humorists*; (g) selections from Lincoln, including at least the two *Inaugurals*, and Lincoln's speeches in *Independence Hall* and at *Gettysburg*, his *Last Public Address*, *Letter to Horace Greeley*, with a brief memoir or estimate; (h) Parkman's *Oregon Trail*; (i) Thoreau's *Walden* (or Huxley's *Autobiography*, and selections from *Lay Sermons*, including the addresses on *Improving Natural Knowledge*, *A Liberal Education*, and *A Piece of Chalk*); (j) Stevenson's *Inland Voyage*, and *Travels with a Donkey*.

Group V. (Two to be selected.)

(a) Palgrave's *Golden Treasury* (First Series), Books II and III, with especial attention to Dryden, Collins, Gray, Cowper, and Burns; (b)

Gray's *Elegy in a Country Churchyard* and Goldsmith's *Deserted Village*; (c) Coleridge's *Rime of the Ancient Mariner* and Lowell's *Vision of Sir Launfal*; (d) Scott's *Lady of the Lake*; (e) Byron's *Childe Harold*, Canto IV, and *The Prisoner of Chillon*; (f) Palgrave's *Golden Treasury* (First Series), Book IV, with especial attention to Wordsworth, Keats, and Shelley; (g) Poe's *Raven*, Longfellow's *Courtship of Miles Standish*, and Whittier's *Snowbound*; (d) Macaulay's *Lays of Ancient Rome* and Arnold's *Sohrab and Rustum*; (i) Tennyson's *Gareth and Lynette*, *Lancelot and Elaine*, and *The Passing of Arthur*; (j) Browning's *Selected Poems* (*Cavalier Tunes*, *How They Brought the Good News from Ghent to Aix*, *Home Thoughts from Abroad*, *Home Thoughts from the Sea*, *Incident in the French Camp*, *Hervé Riel*, *Pheidippides*, *My Lost Duchess*, and *Up at a Villa—Down in the City*).

FOR STUDY, 1913-14-15.

(a) Shakespeare's *Macbeth*; (b) Milton's *L'Allegro*, *Il Penseroso*, and *Comus*; (c) Burke's speech on *Conciliation with America* (or both Washington's *Farewell Address* and Webster's *First Bunker Hill Oration*); (d) Macaulay's *Life of Johnson* (or Carlyle's *Essay on Burns*).

HELPFUL BOOKS FOR THE TEACHER OF ENGLISH

- Bates's *Talks on the Writing of English* (Houghton, Mifflin & Co.).
 *Bates's *Talks on the Study of Literature* (Houghton, Mifflin & Co.).
 Burt's *Literary Landmarks* (Houghton, Mifflin & Co.).
 Carpenter, Baxter and Scott's *The Teaching of English* (Longmans).
 *Chubb's *The Teaching of English* (Macmillan).
 Colby's *Literature and Life in School* (Houghton, Mifflin & Co.).
 Erskine's *Written English* (The Century Co.).
 *Heydrick's *How to Study Literature* (Hinds & Noble).
 *Palmer's *Self-Cultivation in English* (Houghton, Mifflin & Co.).
 Scott's *Principles of Success in Literature* (Allyn & Bacon).
 *Smith's *What Literature Can Do for Me* (Doubleday, Page & Co.).
 Trent, Hanson and Brewster's *English Classics* (Ginn).
 Whitcomb's *The Study of a Novel* (Heath).
 Woodward's *English in the Schools* (Heath).
 **The English Journal*, published monthly from September to June (Univ. of Chicago Press) \$2.00 a year.

CHAPTER V.

HISTORY AND CIVICS

The truth takes flesh in forms that can express it; and thus in history an idea always overhangs like the moon, and rules the tide which rises simultaneously in all the souls of a generation.—*Emerson*.

It is in history that the young first learn to regard the present as the last attained stage of a mighty evolution, and thereby acquire reverence for the vicarious sacrifices of the past, regard for the civil liberties of the present, and a sense of responsibility for the civil welfare of coming generations.—*De Garmo*.

History is still taught in some of our schools as if the acquiring of a vast number of isolated facts by the student were the sole object in view. A knowledge of the important truths of history is necessary, for history study is indeed a search for truth, but merely to put the student in possession of a body of useful facts is no longer the only purpose or the chief purpose of history teaching. "History properly taught offers the first opportunity for a growth of discriminative judgment," says an eminent teacher, and "through history a child should be taught to exercise those qualities of common sense comparison, and plain everyday judgment which he needs for the conduct of his own life." To borrow again from De Garmo, a proper study of history develops the "judgment respecting the civil affairs of men," "engenders a spirit of toleration," trains the student to "exercise the reconstructive imagination," and assists him "to develop his permanent attitude towards political liberty and self-government."

There has been a marked change in history study in secondary schools since the publication of the *Report of the Committee of Ten*, and the change is still going on. Dry text-book instruction is fast yielding place to more rational methods, and one of the results has been to invest the whole subject with a more vital and more wholesome interest. It is now recognized that history can be assimilated only through the imagination, and a conscious effort is made, therefore, to assist the imagination by a proper use of historical fiction, and source material, of maps, pictures and art, by a use of the stereopticon, and in other ways.¹ In short, the appeal is no longer made mainly to the memory, but through the imagination to the understanding. Not many of our rural schools are equipped with the "helps" here mentioned, but they can at least make use of such material as they have, and they can make an effort to get more.

Much poor history teaching has been due to a popular belief that just anybody can teach history, since it is only necessary to read ahead of the class in order to be able to ask the class a few questions. There are still some teachers in the classroom who, if they do not hold to this belief, certainly follow this practice. No intelligent teacher of history can afford to rely for his information solely upon the text used in the class. The teacher of history should so equip himself for his work that he can view historical happenings in their proper perspective, and see the course of history as a continuous stream, or else he will not be able to develop in his students the power to do so. Without this equipment he will be hopelessly at sea when

¹ Sets of excellent views—historical, geographical, scientific, and industrial—are published by the Keystone View Company, New York City, and by Underwood & Underwood, New York City. An inexpensive stereoscope and a few of these views would prove to be a valuable aid to the teacher of history. Catalogues of the firms mentioned may be had for the asking.

he attempts to trace an historic event through cause, course, and result, and unless he has the knowledge and the understanding necessary to do this, he will too often minimize the important and magnify the unessential. "All good teaching must flow from copious knowledge. The shallow fountain can not emit a vigorous stream." In addition to reading the standard historians, every teacher of history should read and study the *Report of the Committee of Seven* (Macmillan), the *Report of the Committee of Ten*, pp. 162-203 (American Book Co.), and De Garmo's *Principles of Secondary Education*, pp. 146-153, Vol. I (Macmillan).

ENGLISH HISTORY.

Next to American history that of greatest interest to us is the history of England. The two nations have a common ancestry, and, hence, a common source of inspiration and institutional ideas. Through a knowledge of the main facts of English history a better understanding of our own is made possible. Indeed, without a fair comprehension of the growth and influence of English institutions, a complete knowledge of our own is impossible, because their roots are deep set in English soil. It is not to be inferred, however, that the only reason for studying this subject is because of the light a knowledge of it throws upon American history. It is eminently important of itself.

It is recommended that a chronological narrative of English history be studied first, and then each period be studied and reexamined by topics. These topics of primary importance like Parliament, the introduction and growth of Christianity, the development of manufacturing and commerce and growth of naval power, popular customs and habits of life, should be carefully reviewed and the results of all investigations recorded in neatly kept note-books. By this method the changes in the habits of life and thought of the England of today may be readily compared with those of the past. The note-books, if preserved, will be found valuable to the class when it comes to a study of our own history.

The teacher will find the following books to be very helpful to himself and his class: Green's *A Short History of the English People*, McCarthy's *A Short History of Our Own Times*, Kendall's *A Source Book of English History*, and Moran's *English Government*.

ANCIENT HISTORY.

Do not attempt to crowd into the study of this period too many names and dates and unessential details. Try rather to give an understanding of the main lines along which these nations (Greek, Hebrew, and Roman) progressed and the ideas for which they stood in social, religious, political, and industrial life. They have contributed much to give modern society its present form and ideals. For instance, the three main corner-stones of modern society were contributed by the ancient nations, namely, the Hebrew religion, Greek culture, and Roman law. Of course, attention must be given to the leading men of the different countries and periods and an attempt made to show their influence upon national life and thought.

MEDIAEVAL AND MODERN HISTORY.

"The study of mediæval history in the high school presents peculiar difficulties. Historically considered, the Middle Ages lie farther from modern

life than the age of the Antonies or the age of Pericles. Both teacher and student find little in present day life which can be used to make clear the life of the Middle Ages. In the United States the church and the university are the only great mediæval institutions which have survived, and these are so different in their present condition that we get only a poor illustration of their place in mediæval times. * * *

"It is well to make clear how feudalism made national life almost impossible, in the Middle Ages, and how, in the absence of the printing press and of means of rapid communication, national feeling grew slowly in a people scattered over great areas."

Some of the topics of primary importance that must be made to stand out clear in the minds of the pupils are the general breaking up of governments and society, the growth of feudalism and its blighting influence, the activity of the Christian fathers and the battles and growth of the church, chivalry and the crusades, and finally the welding of warring factions into distinct nationalities—the recrystallization of social and political life.

"In passing from the Middle Ages to modern life the student must not only keep in mind the great events which marked the transition, but also the change in ideas and movements which accompanied the transition. Such a view will show the student that the ending of one period and the beginning of another can not be accurately marked by a date, but that the germs of the new period are in the old."

The Reformation and its influence upon the religious, political, and industrial life constitute the one big topic of this period, for even such events as the American and French revolutions are but the flowering out of seeds long since sown in this great upheaval.

The teacher of Ancient, Mediæval and Modern history should try to secure for the use of himself and his class such works as Smith's *General History of Greece*, Gibbon's *Decline and Fall of the Roman Empire*, Gayley's *Classic Myths*, and Hallam's *History of the Middle Ages*. Ploetz' *Epitome of Universal History*, translated by Tillinghast (Houghton, Mifflin & Co.), would be found useful as a reference work.

AMERICAN HISTORY.

When the student takes up the study of American history in the last year of the high school course he has reached the stage in his mental development where he can see that our present social and political conditions are but the outgrowth of previous conditions; that states, like human beings, are living organisms; that they are born, grow into strength and influence, and decay; that society is not static but highly dynamic; that the political and social seeds which we sow today will bear fruit tomorrow; that the welfare and guidance of the next generation are to some extent in the hands of the citizen of today, and that he will be held accountable for their transmission from this generation to the next. Unless the student comes to view his country's history and its future in this light, his training in history certainly will not have been made to yield its finest fruitage. The course in American history should be "so taught," in the words of Professor Hanus, "as to show the meaning of democratic institutions and the means of safeguarding and improving them."

The general suggestions given with regard to teaching the history of other countries and other periods hold here as well. The text-books recommended

emphasize the essentials of American history so well that further direction at this point is not deemed necessary.

CIVICS.

It seems odd that the public schools, established and maintained as they are for the training of future citizens, should have paid until recently so little attention to this important branch of study. Without some knowledge of civics the student certainly is not equipped for the highest citizenship. Every citizen ought to understand the underlying principles of his own government and from some acquaintance with the workings of these principles in practical affairs.

In our public schools civil government is introduced at two places; first in the intermediate grades and again in the last year of the high school. It is this last year's work which concerns us here. It will be noted that civics is not recommended as a separate study at this place. A separate text may be used by the class, but the work should be so closely connected with the work in American history that each subject may supplement the other. Constant reference to parallels and divergences in foreign politics may be interesting and helpful, but the course must center particularly about our own government and its institutions.

Mr. W. J. Peele, author of *Peele's Civil Government*, has the following suggestions to offer on the subject of civics in the high school:

"Pupils in the *high school* grades are presumed to know something of *civics*, it being among the subjects prescribed and directed to be taught in the *seventh grade*; and in teaching this subject the teacher doubtless familiarized himself with the *suggestions for teaching civics* set forth in the *course of study* for that grade. Where the pupil in the high school has received very little previous instruction in civics, his teacher is referred to the suggestions above mentioned. Where, however, the pupil's preliminary examination discloses that his training in the study of *our government and institutions*, state and national, has not been neglected and that he has at least a passing acquaintance with the first two parts of the book, *Peele's Civil Government*, adopted for use in the seventh grade, then the teacher has to deal with the problem of *enlarging* the scope of his views and *vitalizing* the knowledge of his own relation to the governments under which he lives. This brings us to the study of *citizenship*—the rights, duties, responsibilities, privileges, and dangers of citizenship and the training necessary for properly safeguarding the citizen.

"This subject is treated in the *third part* of the *Civil Government* above named; and where this book is also used in the high schools the author has this to say as to how the subject should be taught.

"Let the examples be concrete. When, for example, the *voter* or *voting* is under consideration, let the pupil understand that the power to vote is a privilege which may be forfeited by bad conduct rather than a right to which all are equally entitled. Arouse his contempt for a man who would *buy or sell a vote*. Let him learn thoroughly the requirements for voting in North Carolina. Show him how the right to vote may be *lost* and how *restored* to those who have become worthy of it.

"Avoid party political questions and discussions. Explain to the pupil the reason of the secret ballot. An enterprising teacher some Friday afternoon may hold a *moot election*, which may be also sometimes a real election

for some officers in the schoolroom. A teacher is sometimes aided in discipline by training the school in the art of *self-government*—making it a self-governing body as far as found practicable.

"Above all things the teacher must make himself a master of the subject if he would hold the interest of his pupils.

"*Courts and juries* are very interesting to children, and the teacher by using the text-book as a *skeleton of principle* and authority may fill in his own knowledge by talks with lawyers or even with very intelligent justices of the peace and other citizens. In this way an enterprising teacher can speedily gain enough knowledge of the simple forms, in the lower courts especially, to conduct a moot court, in which some case may be occasionally tried on its merits.

"After the teacher has drilled the pupils by short lessons, thoroughly mastered, until he has gone over the *third part* of the book, the part relating to citizenship, he may then turn back to *part one* and consider the chapter on *The Two Federal Constitutions Compared* and on *State and Federal Governments Compared*. In order to make these two chapters more interesting short studies should be made of the lives of the men who were principally concerned in the *formation and adoption* of the State and Federal Constitutions—such men as Jefferson, Madison, Hamilton, Franklin, Henry and Harnett, Caswell, Jones, Macon, Gaston, but do not let these brief references to the men take the pupil's mind away from the *principles* they were introduced to illustrate. One may easily 'gas' about a big man whose philosophy of government he is too lazy to learn.

"The more dramatic pages in the utterances of these men, too, concerning the rights of men and the principles of government will add greatly to the knowledge of the child as well as stimulate his interest.

"Is there any child in North Carolina who ought not to memorize the immortal words of Jefferson taken from the *Declaration of Independence*?

"That all men are created equal; that they are endowed by their Creator with certain inalienable rights; that among these are life, liberty, and the pursuit of happiness; that to secure these rights governments are established among men; that when a form of government becomes destructive of these ends it is the right of the people to alter or abolish it, and to institute a new government, laying its foundations on such principles and organizing its powers in such form as to them shall seem most likely to effect their safety and happiness."

STATE HISTORY.

Considerable attention is paid to this subject in our intermediate grades, but it is hardly possible for the student to get there a view of our history as a continuous narrative. The facts he gets before reaching the high school are fragmentary and isolated. These facts must be assimilated and correlated and supplemented by further study. In the high school is the place to do this. The limited time, however, devoted to North Carolina history, forbids an elaborate study of the subject. It is recommended, therefore, that the class study for a few weeks some short, interesting narrative of the State's history¹ in order to get its main outlines firmly fixed in mind, and then devote the remainder of the year to a careful study of certain topics.²

¹ For this purpose Connor's *The Story of the O'd North State* (Lippincott), and Alderman's *A Brief History of North Carolina* (Ginn & Co.), are recommended.

² Write to Mr. R. D. W. Connor, Secretary of the North Carolina Historical Commission, Raleigh, N. C., for *History Leaflets*, which will serve as aids in this work.

Special emphasis should be laid upon such events, their causes, course, and results, as bear upon our national history. By a careful study, for instance, of the causes and results of the battles of Moore's Creek, Elizabethtown, Ramseur's Mill, Charlotte, and Guilford Court House much may be learned of the character of our forefathers, and the habits of thought in our State today may be more easily accounted for. Still more light will be thrown on this subject by studying the quarrels between the people and the early governors, such as those in Albemarle, the quarrel between the Assembly at New Bern and Governor Martin, the rejection and final adoption of the Federal Constitution, the making of the Constitution of 1835, and the two secession conventions. An effort should be made to give a brief and succinct account of the beginning and development of our educational system and of our manufacturing interests.

The character of this work must, of course, depend more upon the teacher than upon any other factor, to aid the pupil in bringing out of the texts and reference books a great deal more than has been suggested here.¹

OUTLINE OF COURSE IN HISTORY AND SUGGESTED TEXTS.

FIRST YEAR.

English History (3 periods).

Texts Suggested.

Montgomery's *Leading Facts of English History*, Revised Edition (Ginn & Co.).

Coman & Kendall's *A Short History of England* (Macmillan).

Larned's *History of England* (Houghton, Mifflin & Co.).

Andrews's *A Short History of England* (Allyn & Bacon).

Nivers's *A School History of England* (American Book Co.).

SECOND YEAR.

Ancient History to 800 A. D. (3 periods).

Texts Suggested.

Botsford's *Ancient History for Beginners* (Macmillan).

West's *Ancient World* (Allyn & Bacon).

Myers's *General History* (Ginn & Co.).

Morey's *Outlines of Ancient History* (American Book Co.).

Davis's *Readings in Ancient History*—I *Greece and the East*; II *Rome and the West* (Allyn & Bacon).

Westerman's *The Story of the Ancient Nations* (Appletons).

Webster's *Ancient History* (Heath).

¹ Every teacher is urged to try to secure for the school library such old books as Wheeler's *History*, Wiley's *North Carolina Readers*, Caruthers' *The Old North State*, Foote's *Sketches*, Hawk's *History of North Carolina*, Moore's *Library History of North Carolina*, and such other books as bear upon State history. Of course a set of the *Colonial and State Records* would be a most valuable addition to any library for both teacher and student. The *History of North Carolina*, 2 Vols., by Captain S. A. Ashe, will be found indispensable. This should be procured first, as it is the only up to date library history of the State. The *North Carolina Booklet*, now in its fourteenth volume, is a veritable storehouse of valuable information bearing on the State's history. Certain back numbers of this publication may be obtained at small cost from the editor, Miss Mary H. Hinton, Raleigh, N. C. The High School Library ought to contain the valuable publications of the North Carolina Historical Commission. These may be had from the Secretary of the Commission, Mr. E. D. W. Connor, Raleigh, N. C. There should also be in every high school library the Abstract of the Thirteenth U. S. Census with the North Carolina Supplement. This can be had through your representative in Congress. It contains an abundance of material bearing on the various phases of the State's life which a wide-awake teacher could use to advantage.

THIRD YEAR.

Mediæval and Modern European History (3 periods).

Texts Suggested.

Myers's *General History* (Ginn & Co.).

Myers's *Mediaeval and Modern History* (Ginn).

Harding's *New Mediaeval and Modern History* (American Book Co.).

Bourne's *Mediaeval and Modern History* (Longmans).

West's *Modern History* (Allyn & Bacon).

FOURTH YEAR.

American History and Civics (4 periods); North Carolina History (1 period).

Wherever there is a good library in connection with the school it is recommended that a good deal of the work during this year be devoted to the consideration of special topics in both state and national history. These topics should be assigned by the principal as a part of a carefully planned course. The students should make their investigations carefully and as thoroughly as the library facilities will admit of. Every student should keep a note-book in which to record accurately and neatly all his investigations and reports.

Texts Suggested.

Hart's *Essentials in American History* (American Book Co.).

Adams & Trent's *History of the United States* (Allyn & Bacon).

Johnson's *High School History of the United States* (Holt).

Stephenson's *An American History* (Ginn).

Peele's *Civil Government of North Carolina and the United States* (Johnson).

Schwinn & Stevenson's *Civil Government* (Lippincott).

James & Sanford's *Government in State and Nation* (Scribner).

CHAPTER VI.

MATHEMATICS

He who has not known mathematics and its results in natural science has died without knowing what truth is.—*Shelbach*.

The teacher of mathematics has greater opportunity for training the minds of his pupils to logical methods of thought and precision of statement than the teacher of any other subject in the high school curriculum. "This subject is preëminent in its power to train the mind in form and number to exact and progressive thinking, to adequacy of conception and precision of expression. * * * Mathematics, moreover, helps to quicken the scientific conscience by making the student unsatisfied with inaccurate and inadequate knowledge, and with expression that lacks precision or apprehension that does not arrive at full comprehension."¹

This is true because mathematics is one of the exact sciences. The truth and validity of its laws are universal and invariable, and all its principles are capable of exact demonstration. Through a proper study of the subject the student's respect and enthusiasm for what is universally true are aroused. "Here, in the first place, is knowledge of whose certitude there can be no question, which is not subject to the caprice, opinion, or volition of men. Here there is no authority but that of truth itself. Certainly in the realm of mathematics the favorite aphorism of Lucretia Mott holds with unquestioned force, 'Truth for authority; not authority for truth.' Mathematics has to do, not with memorized and transmitted traditions, or with superstitions and beliefs hoary with age, it may be, but with a system of demonstrable propositions developing from a few self-evident truths that appeal to the understanding with a directness and convincing certainty found nowhere else. * * *

"Next after certitude in educational importance we may perhaps reckon the progressive nature of algebra and geometry, indeed of mathematics as a whole. Starting from the most elementary stages of mathematical insight, each of these subjects, the one in the realm of time, the other in that of space, proceeds in unbroken order to even higher generalizations, which assume manifold relations to each other, and which in turn lay the foundations for still further advancement. There is consequently a never-ending series of definitions, principles, combinations and demonstrations that reward the mind for its past efforts and stimulate it to ever renewed exertions."²

So much for the content and educational value of mathematics in general. The full course, as outlined for the public schools of North Carolina, covers four years' work and includes Arithmetic, Algebra, and Geometry.

ARITHMETIC.

It has been said that the art of arithmetic is the most important art of civilized life. This statement is based upon the fact that a knowledge of arithmetic is essential in all civilized life because of its universal use in

¹ De Garmo, *Principles of Secondary Education*. ² *Ibid*.

store, bank, and factory, as well as on the farm, and in every department of labor where accounts are kept and profits reckoned.

The teacher should always insist upon accuracy of work first, neatness next, and then rapidity. From time to time he should have special drills in the fundamental processes which are of such constant use in practical work. Let the teacher ever remember to stress the *principles* of arithmetic rather than its *puzzles*. Much attention should be given to oral work. There is an abundance of material in all of the books recommended that may be adapted to this purpose. Or the principal may, if he thinks best, make use of some "mental arithmetic" for this purpose, such as Colburn's or Milne's. In all work, whether it be written or oral, remember that inadequate conception means inaccurate statement, and that slovenly habits of expression are due to careless habits of thought. To improve either method of thought or habit of expression both must be taken into consideration. The opportunity to improve both is afforded the teacher of arithmetic.

ALGEBRA.

The course in algebra extends over two and one-half years' work, beginning with the second term of the first year and continuing throughout the third year. It will be noted that no elementary text-book is recommended to precede the usual high school algebra, for it is believed that better results can be obtained by using a single volume. The time that might be spent on the elementary book can, it is thought, be used to better advantage on arithmetic and such algebraic methods as may be introduced into the arithmetic work without placing a formal text in algebra into the hands of the pupils.

In case the principal prefers, however, to use a two-book course in Algebra, there will be no objection raised. Among the excellent elementary books for the first year's work may be mentioned those by Wells and Hart (Heath), Slaughter and Lennes (Allyn & Bacon), Milne (American Book Co.), Wentworth (Ginn).

GEOMETRY.

All real advancement in the science of mathematics depends not upon memory but upon progressive insight into mathematical principles. In no branch of elementary mathematics is this fact more strikingly manifested than in the study of geometry. The student beginning this subject is entering upon a study that seems to him quite different in its content from any he has previously met. In his attempt to overcome the initial difficulties he is more than apt to resort to the expediency of memorizing the demonstrations without getting a genuine insight into the underlying principles. And this habit of memorizing, once formed, is hard to break; particularly is this true with the student of geometry. Here is a point the teacher must guard and guard well.

OUTLINE COURSE IN MATHEMATICS AND SUGGESTED TEXTS.

FIRST YEAR.

Arithmetic and Algebra (5 periods).

A careful study of all the review and supplementary exercises in Milne's *Standard Arithmetic*, including those parts of the book which involve algebra and geometry. A review of such other parts as may seem necessary (5

periods a week during the First Term, and 2 periods a week during the Second Term). Algebra begun in Second Term (3 periods a week). Algebra may be begun at the beginning of the fall term, say, two or three times a week, alternating with arithmetic.

Texts Suggested.

Milne's *Standard Arithmetic* (American Book Co.).

Wentworth's *New School Algebra* (Ginn).

Milne's *Standard Algebra Revised* (American Book Co.).

Slaught and Lennes's *First Principles of Algebra, Complete Course* (Allyn & Bacon).

Wells's *Algebra for Secondary Schools—Pocket Edition* (Heath).

Wells and Hart's *New School Algebra* (Heath).

Hawks, Luby & Touton's *Complete School Algebra* (Ginn).

SECOND YEAR.

Algebra (5 periods).

Texts Suggested.

Same as for first year.

THIRD YEAR.

Algebra completed (5 periods a week during First Term and 2 periods a week during Second Term).

Geometry begun (3 periods a week during Second Term).

Texts Suggested.

Algebra—same as for second year.

Wentworth's *Plane and Solid Geometry* (Ginn).

Wells's *Essentials of Plane and Solid Geometry* (Heath).

Milne's *Plane and Solid Geometry* (American Book Co.).

Hart and Feldman's *Plane and Solid Geometry* (American Book Co.).

Slaught and Lennes's *Plane and Solid Geometry* (Allyn & Bacon).

FOURTH YEAR.

Plane and Solid Geometry completed (First Term, 5 periods a week, and Second Term, 3 periods a week).

A study of some good higher arithmetic, reviewing such topics and principles as may seem necessary (2 periods a week during the Second Term).

Texts Suggested.

Geometry texts same as for preceding year.

Beman & Smith's *Higher Arithmetic* (Ginn).

Milne's *Progressive Complete Arithmetic* (American Book Co.).

Wells's *Academic Arithmetic* (Heath).

CHAPTER VII.

ANCIENT LANGUAGES.

He who knows not the Ancients has lived without knowing what beauty is.—*Hegel*.

In teaching the ancient languages three lines of work are to be carried on simultaneously: (1) inflection and derivation, (2) syntax, (3) interpretation and translation. While these three lines should at no time become separated, yet during the first year of the study the first named should receive greater attention than either of the others. And along with this should be emphasized the acquirement of an adequate vocabulary. Success in the third line will depend upon success in the other two. If the work of the first two years is faithfully and adequately done, the student should have little difficulty thereafter in his study of Latin and Greek.

LATIN.

Suggestions to teachers of Latin in the high school may well emphasize features of the work known to be good and may also present others which, it seems, will be fortunate additions to the methods usually followed with beginners. And emphasis should first be given to the necessity for an exact and facile knowledge of the declensions and conjugations and the more frequent recurring uses of the cases, moods, and tenses. The student may not hope to read the language with ease and quickness of understanding until he is master of the forms and the various meanings which these forms have. As soon as the word is before the eye, the mind should know the case, mood or tense and all its possible uses. And exactness should be the aim, as well as quickness. In certain studies it would be an error to mistake a brick for a piece of quartz. But it is not less an error to confuse two case forms or two uses of a mood or tense. Exactness in observing forms and facility for determining their meaning are essentials for successful work in Latin. This mastery of the language and this exactness of habit can not be secured without effort. There is no easy method of learning Latin and there never will be. He alone will be able to read with facility who, in the beginning, has been taught exactly and carefully the forms of the language and their use in syntax. No method which attains that end can be old fashioned.

Correct habits of pronunciation should be secured with the beginner. If the proper sounds are used in learning the paradigms, if the accent be rightly placed at this time, the habit will be followed. And differences in quantity should also be observed. The long vowels are not the same or even similar to the short; they are different letters. Hence the teacher should insist that twice as much time be taken for the long as for the short. In reading the hexameter verse also, there can be no success unless the difference between long and short is carefully observed. The Roman method of pronunciation should always be used.

There is another difficulty which should be carefully presented to the beginner. This is the arrangement of words. The Latin is more elastic than the English and admits of greater variety in the position of the elements

of the sentence. But the Latin order is rational, and presents the thought often in the best possible way. Hence all successful reading must be done in the order of the original. In no other way can it become facile. Let the student understand the sentence as it stands, reading it by its thought in units and without transposition or any disarrangement of the order. When all the thoughts are thus understood, they may then be restated in simple English. This method is successfully taught by reading aloud easy sentences, presenting but one thought at a time and allowing the student to see the meaning in the order of the original. And if all the thought is clear to him without the necessity of translation, the method is most highly successful.

And after the reading of continuous narrative has begun, attention should be given to translation at sight. By this method the student is given greater facility in recognizing the forms, the syntax of words, and finally the meaning of the sentence. The student should also be taught to detect the meaning of a word from its position in the sentence, from association or similarity to an English derivative. This will aid him in mastering the small vocabulary necessary to easy reading.

Practice in prose composition should be begun as soon as the simplest principles of grammar have been mastered, and continued throughout the period of preparation. This is the best possible drill in the forms and syntax of a language. It is also a decided aid to the acquiring of a reading vocabulary. It is well, too, to have the student put into Latin passages which he has translated into English from Cæsar or from the reading book used in substitution for Cæsar.

Finally, the study of Latin should always be associated with the lives of the people who spoke it. Emphasis should be given to history, geography, manners, and customs, and, in general, the great contributions made by Rome to civilization.

FIRST YEAR.

Beginner's Latin (5 periods a week).

Texts Suggested.

Collar and Daniell's *First Year Latin* (Ginn).

Pearson's *Essentials of Latin* (American Book Co.).

Gunnison and Harley's *First Year of Latin* (Silver).

Inglis and Prettyman's *First Book in Latin* (Macmillan).

Bennett's *First Year Latin* (Allyn & Bacon).

D'Ooge's *Latin for Beginners* (Ginn).

SECOND YEAR.

First Latin book reviewed and some introductory book to Cæsar read (5 periods a week, First Term).

Cæsar begun, Second Term, 2d and 3d Books of the Gallic war read (5 periods a week, Second Term).

Texts Suggested.

(For introductory books to Cæsar).

Ritchie's *Fabulæ Faciles* (Longmans).

Scudder's *Gradatim* (Allyn & Bacon).

If the teacher wishes to substitute a single book for both introductory book and Cæsar, the following are recommended:

Rolfe and Dennison's *Junior Latin Book* (Allyn & Bacon).
 Greenough, D'Ooge and Daniell's *Second Year Latin* (Ginn & Co.).
 Excellent little books for sight reading are the following:
 Howe's *A Latin Sight Reader* (Thompson Pub. Co.).
 Gallup's *A Latin Reader* (American Book Co.).

THIRD YEAR.

Cæsar, Books 1 and 4, or equivalent, Composition, and Grammar (5 periods a week, First Term); Cicero, 4 orations against Catiline, Composition and Grammar (5 periods a week, Second Term).

Texts Suggested.

(a) Grammar:

Bennett's *Latin Grammar* (Allyn & Bacon).
 Gildersleeve-Lodge's *Latin Grammar*—School Ed. (Heath).

(b) Composition:

Pearson's *Latin Prose Composition*, I Based on Cicero; II Based on Cicero (American Book Co.).

Gildersleeve-Lodge's *Latin Composition* (Heath).

Barss' *Writing Latin*—Book Two (Heath).

Bennett's *New Latin Composition* (Allyn & Bacon).

FOURTH YEAR.

Vergil's *Æneid*, 6 Books, Composition, and Grammar (5 periods a week during the year).

Texts Suggested.

Same as for previous year.

GREEK.

When a student leaves the high school, he is expected to know the grammatical forms of nouns, adjectives, pronouns, and verbs; the leading principles of syntax; to have acquired a reasonably good vocabulary of Greek words; to be able to read ordinary Greek with some readiness, and to turn simple English sentences into Greek. This is not very much, but one who knows this ought to have little trouble in his further study of Greek.

It is of greatest importance that the beginner should at once become familiar with the appearance and sounds of Greek words. He should, therefore, have constant practice in pronunciation from the very start. Time will be saved by devoting a large part of the earlier recitations to pronunciation. Most of the supposed difficulty in Greek is due to the learner's uncertainty about the pronunciation of Greek words. Practice will remove this difficulty.

In all things accuracy should be insisted upon. Frequent reviews are necessary. Everything about a language can not be taught in connection with any one lesson. A few things should be prepared with special care each day or week. In this way, all of the more important principles can be covered in a short time, and applied to the text read.

The verb is supposed to be hard to learn. Perhaps it is hard. But there is almost no form of the verb that does not bear on its face signs of what it is and where it is. Students should be taught to observe these signs.

Themes, tense suffixes, mood-signs, personal endings, augment, reduplication, etc., ought to be understood perfectly. The student can easily be trained to locate at sight almost any form of the verb.

The introductory books contain enough exercises for preparatory instruction in prose composition. It is a good plan to have the class turn back into Greek the translation which they have made of their reading lesson.

The absolute mastery of a small vocabulary is necessary in any language. Two or three hundred of the commonest words can be selected and committed to memory. Students get into the habit of looking up the meaning of words which they already know. All of the commonest words occur so often that there is no reason for not recognizing them. For example, Xenophon uses more than ten times in the three books of the *Anabasis* ninety-four verbs, sixty-two nouns and twenty-six adjectives, to say nothing of the pronouns, prepositions, conjunctions, and common adverbs. All of these can be thoroughly learned in a few weeks, or in a few years. It is just as easy to learn them in a few weeks, and considerably better. Some practice in reading easy Greek at sight will strengthen the student's vocabulary. The New Testament (Wescott and Hort's edition) is excellent for use in sight reading.

Students should be taught to translate each word in the order in which it stands in the Greek sentence. This is essential to progress, and is the natural way to arrive at the true meaning. In recitation, the translation should, of course, be given in the best English.

FIRST YEAR.

Beginner's Greek (5 periods a week during the year).

Texts Suggested.

White's *First Greek Book* (Ginn & Co.)

Ball's *The Elements of Greek* (Macmillan).

Benner and Smyth's *Beginner's Greek* (American Book Co.).

Any of these books contains everything that teacher and student will need to consider during the first year of Greek.

SECOND YEAR.

Grammar, Composition, and 4 Books of the *Anabasis* (5 periods).

Texts Suggested.

Babbitt's *Greek Grammar* (American Book Co.)

Hadley-Allen's *Greek Grammar* (American Book Co.).

Goodwin's *Greek Grammar* (Ginn & Co.).

CHAPTER VIII.

MODERN LANGUAGES¹

The languages selected in this group are French and German. In each the suggested high school course extends over two years and coincides with the "Elementary Course" outlined by the Committee² of Twelve of the Modern Language Association of America.

At the end of this elementary course the pupil will be expected to read at sight easy prose, to put correctly into the foreign language short English sentences based upon the passage assigned for translation, and to answer questions on the ordinary forms and constructions of the language under consideration.

The method of instruction explained below will provide linguistic training as a matter of mental discipline and lay a good foundation for wider reading or for other uses of the foreign language; incidentally it will fit the pupil to satisfy the college³ entrance requirement. Although some pupils might under favorable circumstances complete the elementary course in less than two years, teachers are strongly advised to insist upon the longer period, in order to be sure that the work is done thoroughly. There should be short lessons with constant oral practice and frequent reviews. Satisfactory instruction in language must proceed slowly enough to allow time for digesting the material. Subsequent progress will be all the more rapid if the foundation be well laid.

There should be at least four recitations per week⁴ during each of the two years. At each recitation there should be a short oral exercise and once a week an exercise in dictation. The oral exercise need not be an attempt at conversation, but may consist in the use of sentences taken from the grammar. The value of drill in regular *conversation* is very great, especially at the beginning of the course; but unless the teacher speaks the language fluently, no such attempt should be made. In any case the material used for the oral practice should be carefully prepared by the teacher in advance.

PRONUNCIATION.

Correct pronunciation is to be taught at the beginning of the course. Bad habits of pronunciation once acquired are difficult to correct, but by patience and care on the part of the teacher the pupil may form good habits, and it is generally true that the correct pronunciation is just as easy for the organs

¹ This chapter, prepared for the second edition of the Handbook by Prof. W. D. Toy, of the University of North Carolina, is reproduced here without revision, except that two or three of the more recent books for beginners have been added.

² *Report of the Committee of Twelve*, Boston, D. C. Heath & Co.; 16 cents. This report treats in full all questions relating to the teaching of modern languages in the schools, and outlines three courses of instruction; the elementary, the intermediate, and the advanced, for use in schools throughout the United States.

³ It can not be too often repeated that the high school course is not mainly a preparation for entrance to college. But it is equally true that this course ought to give to those pupils who intend to enter college the training necessary to satisfy the entrance requirement. The course suggested here in French and German will do this. Pupils intending to enter college should by all means get their elementary instruction in these languages at the secondary school. Such instruction can be given there more satisfactorily than in the colleges or universities, where the classes are larger and time allotted to this study is more limited.

⁴ Much better results may be obtained by having five recitation periods per week, especially during the first year.

of speech of our American pupils as the faulty pronunciation. The failure usually results from lack of attention. The first condition of success is that the teacher himself be thoroughly competent.

At the beginning it will be well to explain clearly the value of the sounds, taking only a few at a time and occasionally explaining the action of the organs of speech in the production of a given sound. The pupils may then be taught to imitate accurately the sounds uttered by the teacher. There should be throughout the course constant practice in using the foreign language in order to save the pupil from morbid dread of uttering a sound for fear of pronouncing it badly. It must be remembered that although a correct pronunciation without real command of the language is useless, a faulty pronunciation is always a blemish.

GRAMMAR.

The first lessons in grammar ought to be short, so as to allow time for abundant oral practice on the inflection. It is not well to learn the inflections mainly by recitation of paradigms, but rather by the oral practice to acquire an instinctive acquaintance with the meaning of the forms. The grammar is to be regarded merely as an orderly explanation of the language. It is not to be studied independently; but it must be learned. The ability to translate correctly depends upon accurate knowledge of the grammatical forms and the general habits of the language.

READING.

The translation into English may be begun as soon as the class has studied the verb, and be carried on in connection with the study of the grammar. During the first year some teachers may prefer to use a reader graded with respect to difficulty. Connected texts may then be taken up in the second year. In all cases the pupils should read aloud in the foreign language and then translate into good, idiomatic English, giving the exact meaning of the original. Accurate translation depends upon definite principles, not upon subjective notions based on a hurried glance at the words. It is this reliable method of translation that is to be taught. The main difficulty in rendering a given passage correctly is frequently not a matter of vocabulary, but of the relation of the individual words and clauses to each other. This is especially true in the case of German.

During the second year it will be well to have regular practice in reading at sight, with material that the pupil can readily understand. By this exercise the pupil learns to depend upon his own stock of information and to make legitimate inferences about the meaning of words. As his acquaintance with the language grows, he should be encouraged to read easy passages in the original without translation.

WRITING OF EXERCISES.

The grammar usually contain a sufficient number of exercises for translation into the foreign language. In writing the exercises the pupil ought first to learn well the model sentences given in the accompanying exercises in French or German, and then make his own sentences according to the model. Here as elsewhere the guiding principle should be to keep in sympathy as

much as possible with the actual language as used by the people who speak it and not trust to mere theories or to chance suggestions.

In the case of German the question arises as to whether the pupil should learn to use the German script. It is not a matter of great importance. If the teacher has time, he is advised to teach the use of the script. It is used by the Germans in their correspondence and acquaintance with it is sometimes of value.

Below is added for the guidance of teachers the outline of the two years elementary course in French and German suggested by the Committee of the Modern Language Association for the Schools of the United States. If any teachers should find the amounts of reading suggested too long to be accomplished, thoroughly in the time assigned, it will be well to adopt smaller minimum amounts as follows: for French, first year, 100 pages, 12mo.; second year, 200 pages, 12mo. For German, first year, 50 pages, 12mo.; second year, 150 pages, 12mo.

THE ELEMENTARY COURSE IN FRENCH.

FIRST YEAR.

During the first year the work should comprise: (1) Careful drill in pronunciation; (2) the rudiments of grammar, including the inflection of the regular and the more common irregular verbs, the plural of nouns, the inflection of adjectives, participles, and pronouns; the use of personal pronouns, common adverbs, prepositions, and conjunctions, the order of words in the sentence, and the elementary rules of syntax; (3) abundant easy exercises, designed not only to fix in the memory the forms and principles of grammar, but also to cultivate readiness in the reproduction of natural forms of expression; (4) the reading of from 100 to 175 duodecimo pages of graduated texts, with constant practice in translating into French easy variations of the sentences read (the teacher giving the English) and in reproducing from memory sentences previously read; (5) writing French from dictation.

SECOND YEAR.

During the second year the work should comprise: (1) The reading of from 250 to 400 pages of easy modern prose in the form of stories, plays, or historical or biographical sketches; (2) constant practice, as in the previous year, in translating into French easy variations upon the texts read; (3) frequent abstracts, sometimes oral and sometimes written, of portions of the text already read; (4) writing French from dictation; (5) continued drill upon the rudiments of grammar, with constant application in the construction of sentences; (6) mastery of the forms and uses of pronouns, pronominal adjectives, of all but the rare irregular verb forms, and of the simpler uses of the conditional and subjunctive.

Texts Suggested.—First Year.

The number of available grammars and readers is large; in their selection teachers may be guided by their point of view. The following are mentioned as specimens:

Chardenal's *Complete French Course* (Allyn & Bacon).

Fraser and Squair's *French Grammar* (Heath).

Francois's *Essentials of French* (American Book Co.).

Joynes' *Minimum French Grammar* (Holt).

Super's *French Reader* (Heath).

Whitney's *French Reader* (Holt).

Second Year.—Suitable texts for the second year are:

About's *Le Roi des Montagnes*; Bruno's *Le Tour de la France*; Chateaubriand's *Le Dernier Abencerage*; Daudet's easy short tales; De la Bédollière's *La Mère Michel et Son Chat*; Erckmann-Chatrian's stories; Feuillet's *Le Roman d'un Jeune Homme Pauvre*; Foa's *Contes Biographiques* and *Le Petit Robinson de Paris*; Foncin's *Le Pays de France*; Labiche and Martin's *La Poudre aux Yeux* and *Le Voyage de M. Perrichon*; Legouvé and Labiche's *La Cigale chez les Fourmis*; Malot's *Sans Famille*; Mariet's *La Tache du Petit Pierre*; Mérimée's *Columba*; extracts from Michelet; Sarcey's *Le Siege de Paris*; Verne's *Stories*.

THE ELEMENTARY COURSE IN GERMAN.

FIRST YEAR.

During the first year the work should comprise: (1) Careful drill upon pronunciation; the memorizing and frequent repetition of easy sentences; (2) drill upon the rudiments of grammar, that is, upon the inflections of the articles, of such nouns as belong to everyday life, of adjectives, pronouns, weak verbs, and the more usual strong verbs, also upon the use of the more common prepositions, the simpler uses of the modal auxiliaries, and the elementary rules of syntax and word-order; (3) abundant easy exercises designed not only to fix in mind the forms and principles of grammar, but also to cultivate readiness in reproduction of natural forms of expression; (4) the reading of from 75 to 100 pages of graduated texts from a reader, with constant practice in translating into German easy variations upon sentences selected from the reading lesson (the teacher giving the English), and in the reproduction from memory of sentences previously read.

SECOND YEAR.

During the second year the work should comprise: (1) the reading of from 150 to 200 pages of literature in the form of easy stories and plays; (2) accompanying practice as before in the translation into German of easy variations upon the matter read, and also in the offhand reproduction, sometimes orally and sometimes in writing, of the substances of short and easy selected passages; (3) continued drill upon the rudiments of grammar, directed to the ends of enabling the pupil, first, to use his knowledge with facility in the formation of sentences, and, secondly, to state his knowledge correctly in the technical language of the grammar.

Texts Suggested.

The following list contains a portion of the available material from which texts may be selected:

Bacon's *German Grammar* (Allyn & Bacon).

Bacon's *Im Vaterland* (Allyn & Bacon).

Ball's *German Grammar* (Heath)

Bierwirth's *Beginning German* (Holt).

Kiser and Monteser's *Foundations of German* (American Book Co.).

Mosher's *Lern-Und* (Heath).

Thomas's *Practical German Grammar* (Holt).

Thomas and Harvey's *German Reader* (Holt).

Hewett's *German Reader* (Macmillan).

Anderson's *Marchen and Bilderbuch ohne Bilder*; Arnold's *Fritz auf Ferien*; Baumbach's *Die Nona* and *Der Schwiegersohn*; Gerstäcker's *Germelshausen*; Heyse's *L'Arrabbiata*, *Das Mädchen von Treppi*, *Anfang und Eade*; Hiller's *Hoher als die Kirche*; Jensen's *Die Braune Erica*; Leander's *Traumereien*, and *Kleine Geschichten*; Seidel's *Märchen*; Stöckl's *Unter dem Christbaum*; Storm's *Imensee* and *Geschichten aus der Tonne*; Zschokke's *Der Zerbrochene Krug*.

CHAPTER IX.

PHYSICAL GEOGRAPHY¹

PURPOSE OF THE COURSE—TRAINING FOR SERVICE.

The study of the earth sciences is designed not merely to give the pupil a knowledge of facts regarding the earth, but to give him some insight into the laws of nature, and to train him in such a way in field observation and laboratory practice as to fit him for effective service in whatever field of labor he may find himself.

It is the same old story with all effective education, which comes through seeing, thinking, doing. No other subject serves this purpose so completely as geography, which Herbart has called the associating science.

The common American greeting, "How do you do?" should bring teachers to a realization of the demand of the land and the times for education through doing and education for doing; and geography in its various aspects has more relations to human activity than any other study in the curriculum. Its intimate connection with history was long ago recognized; and all of us are what we are largely because we are where we are. Yet man, through a knowledge of his surroundings, may gain a mastery over nature or adapt himself to his environment. That education is best which gives one this power.

PHYSICAL GEOGRAPHY DEFINED.

It is only within recent years that geography could properly be called a science, consisting a generation ago of little more than a bald "description of the earth, its phenomena, its countries, and its inhabitants." Then physical geography had a fairly well recognized field of knowledge, not clearly delimited it is true, and having to do chiefly with nature's more spectacular phases, volcanoes, earthquakes, tides, tornadoes, glaciers, races of men, but dealing in nowise in a satisfactory way with the causes or effects of these physical features and phenomena. The knowledge it presented was well worth having, and much of it is too often overlooked in our elementary work today; but its methods are now open to criticism.

From being a mere description of the earth, geography today includes not only the phenomena pertaining thereto, but their areal distribution, and the causes therefor. This phase of geography had its origin in America, and began in the energetic study of topographic forms, involving their genesis and classification. This new science became known as physiography, a name borrowed from England, where the term is still used in its etymological sense, and includes the whole realm of nature.

With the rebirth of physiography came the introduction into it of the laboratory method of teaching, thus putting it on the same basis as other physical sciences. Today both physical geography and physiography, a name clearly recognized as distinct phases of earth science, and of very unequal difficulty; physical geography should be taught to all pupils as the geographic course preceding the high school, or in the first year of the high school;

¹ This chapter was prepared by Prof. Collier Cobb, of the University of North Carolina, for the second edition of the Handbook, and is here reproduced without revision.

physiography is to be offered toward the close of the high school course. Advanced physiography is distinctly a university study.

The confusing of two ideas and the effort to adapt the more specialized course to young pupils who need a broad, interesting, unspecialized introduction to earth science, has deprived the pupil in the grammar grades of an interesting study and a distinctive stimulus to the imagination, which President Eliot has spoken of as the greatest of human powers no matter in what field it works. True, advanced physiography demands a well-ordered imagination in the university student, which does not come at his bidding unless he has had proper training in the grammar grades; but the subject as taught in the colleges is powerless to develop this imagination in the younger pupils of the schools.

PRESENTATION OF THE SUBJECT.

In presenting the subject of physical geography, the teacher should have constantly in mind that he is training the pupil for life, for a proper appreciation and understanding of his surroundings, rather than fitting him for college. He should bring himself to a realization of the meaning and scope of his subject, dealing with real things, and touching life at every point. Physical geography is coming more and more to be the study of the earth in relation to life; and the earth is to be looked upon as a field for the development of organic life.

Mackinder, of Oxford, has defined geography as a study of the present in the light of the past. When thus conceived it forms a fitting complement to geology, which, as defined by the same author, is the study of the past in the light of the present. The studies are inseparable, and, up to a certain point, their physical aspects may be well followed together under some such name as physiography. (Davis.)

But geology is the science which investigates the history of the earth, and the rocks of the earth's crust contain the records of this history. Geological study shows, too, that forces similar to those of the present have been operating in the past, and most naturalists believe that they are sufficient, given ample time, to account for all the changes that have taken place in the earth's crust. But geography is only geology in the making. It is to geology what the daily newspaper is to history.

STUDYING THE MATERIALS OF THE EARTH'S CRUST.

There is no reason, then, for deferring until the college years the study of common rocks. The child, even in the kindergarten, may gain a speaking acquaintance with them, may know them when he meets them in the road. The characters by which they may be recognized, and something of their history, he may learn by direct observation and simple experiment. To let a single example suffice: he may learn readily that sandstone is simply grains of sand cemented together, and the size and shape of the grains as well as the nature of the cement he may discover for himself, if the teacher will direct as well as guide the pupil's interest. Similarly, the child should learn at first hand something of plants and of animals.

Now all of this may not be physiography, but it does lie at the very foundation of the study of physical geography, and is within the comprehension of the children in the grammar grades, certainly within the comprehension of pupils in the first year of the high school.

FIELD-WORK.

The larger physiographic processes, requiring direct observation out of doors and on a larger scale than the laboratory study of rocks, are a little more difficult; but the processes of weathering, the protective or destructive work of plants, of earth-worms, of ants, of the wind, the work of frost, may all be noted in any neighborhood. The teacher may not go very far afield with his pupils, but an interest in regional geography may be developed and lead to valuable results in a department of geography just now too much neglected.

All this leads to a knowledge of the simpler facts of physical geography, of which there is such inexcusable ignorance, even among persons otherwise well educated, that the French geologist De Launay recently published an article in *La Nature* (Paris, June 25), calling attention to the inexcusable ignorance of these subjects shown by authors of renown, and often even where their departments of learning demanded such elementary knowledge. De Launay calls it geology, but it is just as truly physical geography.

The effort made a few years ago to write physiography down to the comprehension of our public school pupils well nigh destroyed the interest in physical geography. In consequence of this there is now a strong tendency to return to the plan of giving "a broad, unspecialized but vivid course in physical geography." Such a course is already represented in our schools, but it needs to be brought more in accord with modern needs and modern scientific methods. It is with the problems of such a course that we are immediately concerned.

The choice of subject matter, the topics to be treated in this introduction to earth science, may be regarded as an open question. "If the subject matter now given in physical geography be ranged in the order of difficulty beginning with the easiest, it would probably divide itself somewhat as follows: (1) common rocks and simple dynamics, subject to direct observation and experiment; (2) unobserved but spectacular forms and processes, the descriptive material such as constituted the bulk of physical geography twenty years ago; (3) genesis and classification of land forms." (Fenneman.)

COMMON MINERALS AND ROCKS.

"The subject of common minerals and rocks is not only relatively easy of comprehension, but calculated to hold the interest of children. The subject is eminently concrete and needs little imagination. The facts need pointing out rather than explaining." A number of years ago (1883-'84) the writer gave a course in the common minerals and rocks to seventh and eighth grade pupils in the Wilson Graded School who took the course with enthusiasm, and made and cared for a fine collection of the common minerals and rocks of the county, a county not supposed to possess any minerals. Crosby's *Common Minerals and Rocks* (60 cents) was used in connection with the study. Though now decidedly out of date, this little book is still the best for the pupil's use; but the teacher should make constant use of such a manual as Pirsson's *Rocks and Rock Minerals* (\$2.50). The subject is far simpler and easier than the systematic study of land forms, and is certainly adapted to younger minds.

GEOGRAPHIC PROCESSES.

I cannot do better than to quote again from Professor Fenneman: "Probably a little more difficult than the study of rocks is that of those processes which may be subject to direct observation or experimentation. It is assumed here that, in the main, each process can be watched while it makes appreciable progress, as, for example, evaporation, or the solution of limestone in water carbonated by the breath, or transpiration along a beach; or the process, if not watched, may be one which appeals to the imagination as a single act, as the breaking of a rock by frost; or one whose evidences are vividly concrete, as the oxidation of a rock with change of color. Of this nature are most of the weathering processes. Consider the natural sand blast, the making of caves, the work of plant roots, of earth worms, etc.; the issuance of spring waters, etc.; the rounding of stones and the production of sand and mud by attrition; the undercutting of stream banks; transportation in solution, in suspension and at the bottom of the streams, etc. All these and many others are so simple that they need pointing out rather than explaining, and once consciously observed, they will offer a constant allurements to the observation of natural processes, preparing the mind for more technical studies. * * * It is certainly easier than the study of land forms, and fitted to interest younger minds. The strain on the imagination begins when the topographic effects of these processes are considered. That much of this study of processes is commonly called geology, and left to be taught under that name, can not be considered as a matter of weight."

BOOKS AND APPLIANCES.

The Maury's *Physical Geography* of the seventies presented in a way unsurpassed in its time the kind of descriptive geography best suited for informing the pupil of the world about him and stimulating his imagination. The earth as a planet, the air, the ocean, and the land, the life and products of the earth, with their geographic distribution and physical relations, all recognized today as the principal themes of a well-ordered geography course, receive there a treatment stimulating to the pupil and fully in accord with the best knowledge and pedagogical methods of the last generation. The pity is that such an admirable book has been revised out of existence in an effort to incorporate in it material and methods properly belonging to a college course, and just beyond the reach of the average high school pupil. It is fortunate for the pupil entering on this part of the study if his grammar school work has been done with some such book as Frye's *Complete Geography*, or the *Natural Advanced Geography* or Redway and Hinman, or the Tarr and McMurry geographies. But a suitable book for the course in physical geography here outlined has yet to be written; and this is doubtless best for the teacher, as it forces him to go to original sources of information, to geographical journals, and to the discussions of men actively engaged in geographical investigation and instruction.

The genesis and classification of land forms is a far more difficult subject. An acquaintance with the common rocks and some knowledge of nature's processes gained by first-hand study will gradually lead the pupil to trust his own eyes "in matters where process is revealed by form, as when the undercutting of a cliff is revealed by its steepness, or the splitting of a ledge by frost is known by the presence of a talus, or the weathering of a limestone

is shown by a yellow shell surrounding a blue interior. It is easy to find many illustrations in almost every locality. It is practicable to bring indoors many specimens to be used in a similar way, and when a start is thus obtained by observing nature itself, pictures may be used for the same purpose." (Fenneman.)

Then the better known land areas may be described in accordance with the knowledge thus gained at first hand under the guidance of a skillful teacher; or, if the course is given in one year, this work had best be confined to our own continental area. Some attention should be given to modeling and map drawing. The proper use of topographic maps should be learned. The little book on *Governmental Maps*, by Davis, King and Collie, will be a great help with this part of the work. Professional Paper No. 60, of the U. S. Geological Survey, on *The Interpretation of Topographic Maps* is indispensable to the teacher, and may be purchased from the Superintendent of Documents at Washington. *Map Making and Map Reading*, by Robert M. Brown, in the *Journal of Geography*, February, 1904, will be found very helpful. Goode's Sun Board is a simple instrument which is invaluable to the teacher who would make geography something real to his pupils. It may be used for a variety of purposes, among them to establish the true meridian of the observer and to determine his latitude. It is manufactured by the Central Scientific Company of Chicago, and sold by them for \$12 net.

Enough practical use should be made of the weather maps furnished by the government to give the pupil an understanding of the general principles of weather changes and forecasts. Davis's *Practical Exercises in Physical Geography* is a valuable little book. But the teacher, having thoroughly acquainted himself with his subject, must work out his own methods in the field and laboratory. The best books are full of excellent illustrations, and they also furnish many references to the literature of the several subjects. Fairbanks's *Practical Physiography* is especially worthy of note on account of its illustrations.

The teacher should own a copy of Salisbury's *Physiography*. He should, of course, be a subscriber to such a periodical as the *Journal of Geography* (Madison, Wisconsin, \$1), and can get much help with the second part of the course from the *National Geographic Magazine* (Washington, D. C., \$2.50). He should own some standard text-book of geology. LeConte's *Elements of Geology* (\$4) presents the subject in the most attractive way, but it has not been kept fully abreast of geological progress. The *College Geology* of Chamberlin and Salisbury (\$3.50) is very valuable, and every geography teacher should begin his professional library with *The New Basis of Geography* (\$1.50), by Jaques W. Redway. A suggestive book for the teacher is Sutherland's *The Teaching of Geography*, and every teacher should own a copy of Hodge's *Nature Study and Life* (Ginn & Co.).

Above all, the teacher should prepare himself to teach such a course. He may get much help by attending a good summer school where physical geography is taught. He will find a magic lantern an invaluable aid in his work. Text-book illustrations should be supplemented by diagrams, photographs, lantern slides, etc., and should be further enforced by frequent trips to points of interest out of doors. Is such a course as that here indicated possible in the high schools of North Carolina? Clearly, yes; but we can not come to it immediately, but must work up to it carefully and by degrees.

NOTE BY THE EDITOR.

Texts Suggested for Class Use.

- Davis's *Elements of Physical Geography* (Ginn).
- Dryer's *High School Geography* (American Book Co.).
- Redway's *Elementary Physical Geography* (Scribner).
- Salisbury, Barrows, and Tower's *The Elements of Geography* (Holt).
- Tarr's *New Physical Geography* (Macmillan).

Books Suggested for the Teacher.

- Brigham's *Geographic Influences in American History* (Ginn).
- Semple's *American History and Its Geographic Conditions* (Houghton Mifflin Co.).
- Dodge and Kirchwey's *The Teaching of Geography in Elementary Schools* (Rand McNally).
- Holtz's *Principles and Methods of the Teaching of Geography* (Macmillan).

Texts Suggested for Class Use in Commercial Geography.

- Redway's *Commercial Geography* (Scribner).
- Trotter's *The Geography of Commerce* (Macmillan).

CHAPTER X.

PHYSICS¹

TEXT BOOKS.

A good text book should be used in preparation; such books as Steele, Quackenbos, Higgins, Gage's Introduction, etc., are not adequate for a high school course. Millikan and Gale is highly recommended. Carhart and Chute's *First Principles of Physics*, and those of Hoadley, Wentworth and Hill, Mann and Twiss, and Cheston, Gibson and Timmermann are among the best. If the time allowed is not sufficient to cover the whole book carefully, spend at least half the time on mechanics of solids, liquids, and gases. It is in this part of the work that students usually show poor preparation.

ACCURACY OF STATEMENT.

Special attention should be given to definitions of physical terms and the correctness of theories. Accuracy of statement should be made a matter of first importance, for science requires accuracy above all things. For example, such terms as work, energy, etc., are used in a very much more restricted sense in physics than in ordinary life. A dozen men may "work" half a day to move a stump, and yet until the stump is actually moved no work, in the physical sense, is done upon it. Work in physics means not the effort put forth, but the result accomplished. And so with other terms.

The subject of units is at once the most important and the least interesting. Students come up for examination who claim to have had a full year's course in physics, and who yet cannot tell what a poundal is, or a dyne, or a grain. For example, if the question is asked: "What is the kinetic energy of a mass of 16 pounds moving with a speed of 10 feet per second?" the student usually reasons thus: "The expression for kinetic energy is $\frac{1}{2}mv^2$, so multiplying out we get 800 as the kinetic energy," and he proceeds to answer that the amount of kinetic energy is 800. "Eight hundred *what?*" is asked, and the student looks blank. After working over it, the best he can do usually is to say that the answer is in foot-pounds, whereas if he had been carefully taught he would have known that the expression $\frac{1}{2}mv^2$ gives the energy in foot-poundals if English units are used, or in *ergs* if metric units are employed. And so with other formulæ and expressions. *No answer should be accepted unless the units are named*, as well as the numeral part of the result given.

LABORATORY WORK.

As to the laboratory work, plenty of time should be allowed, and painstaking accuracy should be insisted upon. A very good plan is to use the national note book sheets, obtained from L. E. Knott Apparatus Co., 15 Harcourt St., Boston, Mass., who also manufacture the apparatus to be used. It is good and inexpensive. Among good laboratory manuals are Millikan and Gale, Coleman, and Cheston-Dean-Timmermann.

¹ Adapted from an article prepared by Prof. A. H. Patterson for *The North Carolina High School Bulletin*.

Any of these books may be ordered through the nearest book store. Where little money is available, a good deal of apparatus may be manufactured by the instructor, and Dr. Woodhull's little book on "Home Made Apparatus" for physics, chemistry and physiology will be found most helpful. It may be obtained from A. S. Barnes & Co. If a good fund is available for the purchase of apparatus it is earnestly advised that a catalogue of high school apparatus be obtained from Wm. Gaertner and Co., 5347 Lake Avenue, Chicago. This contains a full list of pieces marked under several heads; one mark means that those pieces should be purchased with the first money available, another mark means that those pieces so marked should be next purchased, and so on until a full set is obtained.

Problem work is exceedingly important, and should be emphasized. No student knows a subject until he can apply that subject in a practical way.

THE TEACHER.

Finally, it is the *teacher*, after all, who makes a success or failure of any course. No matter how good the text book, how ample the apparatus, how diligent the student, if the teacher is not fitted to teach the subject the results will be unsatisfactory. If that is the case, the teacher is urged to prepare himself or herself more thoroughly by a course in some good summer school.

Texts Suggested.

Millikan and Gale's *Physics* (Ginn).

Carhart and Chute's *First Principles of Physics* (Allyn and Bacon).

Hoadley's *Essentials of Physics* (American Book Co.).

CHAPTER XI.

CHEMISTRY¹

SHOULD CHEMISTRY BE TAUGHT IN THE HIGH SCHOOLS?

Teachers everywhere have been fast awakening to the fact that school training should primarily be designed to prepare the ninety-five per cent of children for life—not the five per cent for college; and that the knowledge which fits the child best for life is that which enables him best to understand and to appreciate his surroundings.

What is chemistry? In what does chemistry touch the life of the average man? Will a knowledge of chemistry prove of benefit to the ordinary laborer, or farmer, or mechanic, or business man? Such questions have been often asked and my almost invariable reply to the questioner is, "Name *anything* about you with which chemistry has nothing to do?" It makes little difference as to the reply—cloth, paper, glass, wood, brick, the body itself, the food that we eat, and the earth upon which we walk—chemistry teaches of the constitution of these bodies, of the way in which they are made. For the things by which we are surrounded, and we ourselves, are made up in a wonderful way from a very few simpler bodies. Just as brick and stone and wood and mortar can be used to make a city full of houses each different from the other, so a few simpler bodies are so united and put together as to make all of the wonderful world with which we are in everyday contact. Surely it is interesting to know something of the things of which this wonderful world is made, and something of the way in which they are put together, and something of the changes which they undergo. For fire does not destroy wood, or coal, or oil—it merely changes them. The food we eat becomes a part of our body. Similarly trees and plants grow because they absorb the necessary food from the soil and from the air. Some knowledge of these wonders makes life broader and more full of meaning and of pleasure. Is it right that ninety-five per cent of the children of North Carolina should grow up and pass their lives in total ignorance of the structure and changes of the entire world about them?

Chemistry in the high schools should be made a wonderfully interesting study and a study that would contribute a lasting interest to life; but this is only one part of the story. Each man's present life—as he lives it under the conditions of our modern civilization—has been made possible only by the knowledge of chemistry which the world has come to possess. A knowledge of chemistry has made possible the production of iron from its ores and every step of civilization has been dependent upon that knowledge. But that industry is only one of a hundred industries dependent upon a knowledge of chemistry for their existence or for their present perfection. The production of copper and silver and lead and tin and zinc from their ores, and the winning of gold, are dependent upon chemical processes. The chemist explains how best to produce brick, and cement, and mortar and concrete,

¹ This chapter was prepared by Dr. J. E. Mills, of Columbia, S. C., formerly Associate Professor of Physical Chemistry in the University of North Carolina, for the second edition of the Handbook. It is here reproduced without revision.

for the purpose in view. He supervises the manufacture of glass, of paints, and of dyestuffs. He is a necessary adjunct to the sugar refinery and to the soap factory. Not alone for the material of the printing press, but for the paper and the ink as well, a debt is owing to the chemist. He aids the physician with his drugs and the farmer with his fertilizers. To his care is largely entrusted the carrying out of the pure food law and the inspection of drinking water. The above are only examples. Literally in a hundred ways the knowledge of the chemist touches the home life of every man, woman, and child in North Carolina. All of the chemical processes mentioned and the numerous others can be taught in no high school. But a foundation for further reading can and should be laid and some of the simpler and locally more important processes should be taught.

There is yet another side to the story—the knowledge of chemistry may prove directly *useful* in the home or in the daily life. In a village store one afternoon I heard a merchant offer a farmer a good price for his cotton seed. The farmer would not take it, saying that he wished to use the seed for fertilizer. Then the merchant offered to exchange cotton-seed meal for the seed. Still the farmer refused. He thought the seed was the best fertilizer. That farmer lost nearly \$100 that afternoon because of his absolute ignorance of chemistry. The merchant lost also because he failed to obtain the seed that he wanted. That same merchant offered the farmer a fertilizer at \$12 a ton. The merchant had bought several carloads, he said, because it was so cheap, and it had not risen in price that year as had most fertilizers. The chemical analysis was plainly given on the sample. The fertilizer contained nothing of value except a little lime. The merchant was not dishonest; he was simply ignorant. But the farmers near that little village must have lost several hundred dollars that year by buying a fertilizer that was of little real benefit to them, although the exact information with regard to the fertilizer was on each sack. The children of those farmers could have been taught in a few hours the knowledge necessary to prevent such a mistake.

A little knowledge of chemistry enables one to understand far better than is otherwise possible the valuable information given in the many useful bulletins, reports, and magazine and newspaper articles, on such subjects as health, hygiene, sanitation, pure and impure foods, pure and impure paints, patent medicines, scientific farming, insecticides, disinfectants, wood preservatives, etc. A little knowledge of these matters is often the means of saving many dollars. Sometimes, too, it is useful to know how to remove a stain, or to remember that the antidote for carbolic acid is alcohol.

We have argued that chemistry has a place in the high school curriculum because, *first*—It teaches of the constitution and changes of the world about us and the information adds a new interest to, and a new appreciation of, life. Because, *second*—The advance in chemical knowledge is felt in a hundred ways in every home life today. Because, *third*—Chemistry gives much specifically useful information. To these points we would add a *fourth*—Chemistry, if properly taught, is one of the best imaginable subjects to train the pupil to *see for himself, to think for himself, and to do for himself.*

SUGGESTIONS AS TO THE TEACHING OF CHEMISTRY.

If the objects for which chemistry is taught are kept clearly in view, no very serious errors will likely be made in the method of teaching. The following hints may prove of help to some:

1. *Interest the pupil in his surroundings.* Get him to asking questions about the composition of water, air, wood, brick, soil, rocks, sugar, salt, food; in short, anything with which he comes in contact, and questions about the changes which these bodies do and can undergo.

2. *Interest the pupil in any local chemical industry.* If in the country, pay particular attention to soils and fertilizers, the chemistry of dairying and of breadmaking, etc. Numerous valuable bulletins can be obtained free, or with but slight expense, from the United States Department of Agriculture or from the Superintendent of Documents at Washington, D. C., and these should be obtained for reference. Have at least one good reference book on industrial chemistry, such as Thorp's *Outlines of Industrial Chemistry*, at hand and encourage the pupil to read about the manufacture of any article in which he has become interested. He will remember possibly more than you think, but the habit of "looking things up," if once acquired, will be of more benefit to him than the immediate knowledge gained.

3. *Keep your eyes always open to give the student some specifically useful knowledge* about soils and fertilizers, paints, dairying, insecticides, disinfectants, preservatives, patent medicines, removing stains, antidotes for poisons, etc. Some seed is sure to fall on good ground where it will bring forth a hundred fold.

4. *Try to give the pupil an outline of chemical science—its primary laws and its theories.* While his interest is being aroused and certain useful facts are being taught in a more or less hop, skip, and jump fashion, do not forget that chemistry is a science, and therefore lay as sure a foundation for further work as your time and skill will allow. The pupil's interest is at first the great thing to be gained, but *guide his interest*. Don't follow his every impulse, but in addition to any side questions that come up, make some definite progress in a given direction with each lesson.

5. Remember always that it is not *what the student knows* but *what he is able to do* in after life that determines his success. Therefore in all of your teaching make the pupil *think for himself and do for himself*. Cultivate his imagination; it is a valuable aid to right thinking. Every question asked and answered by the pupil himself is worth ten asked by you and answered by the pupil with your aid. But do not let him waste too much time foolishly. Remember that perhaps most of his questions neither you nor any one else can completely answer.

Teach him where and how to get more knowledge, because knowledge increases the power to *do* things.

6. Review constantly.

7. Illustrate the course with experiments where practicable.

8. Do not make the course a mere memory exercise.

9. Do not try to cover too much ground.

10. Do not design the course primarily to satisfy a college entrance requirement. Chemistry is not required for entrance in any college in North Carolina at the present time. Do not be over-anxious to obtain college credit for the course. Some day the colleges and universities will recognize that the training which best fits a man for life should be acceptable as an entrance requirement, and adjustment of credits will quickly follow.

SUGGESTIONS AS TO THE LABORATORY EQUIPMENT.

1. The laboratory equipment can be made as expensive as desired, and in many cases considerable expense is justifiable; but an expensive equipment is not an absolute necessity. If only a few dollars are available, have a set of shelves made, and buy some test-tubes (costing about a cent apiece), some beakers (costing about 10 cents apiece), and some of the cheaper chemicals. Many of them will not cost over 10 cents a pound. In addition, get a set of cork borers, some corks, a considerable amount of glass and rubber tubing of various sizes, alcohol lamps, test-tube brushes, and some empty bottles, etc., as far as the money will hold out. With such an outfit much can be done to illustrate the course and make it interesting. Let any interested pupil repeat the lecture experiments, if laboratory work is not given regularly as a part of the course. In the opinion of the writer, however, laboratory work, though such work is not necessarily performed in a laboratory, should always be given as a part of the course.

2. Chemicals and chemical apparatus can be imported from Germany duty-free for the use of schools and colleges. If the order is of any size, considerable saving (sometimes 25 per cent) can be made by having the chemicals and apparatus imported. This takes about three months. The firms mentioned below are reliable and will quote goods either from stock or for duty-free importation:

Kny-Scheerer Co., 404 West Twenty-seventh Street, New York City.

Eimer & Amend, 205-211 Third Avenue, New York City.

A. H. Thomas Co., 1200 Walnut Street, Philadelphia, Pa.

3. Most of the necessary chemicals are extremely cheap, many costing not over 10 cents per pound. A pound of some of the chemicals will last a good-sized class for several years, other chemicals are used up much more rapidly. The cost of making up individual packages and the cost of the containers is such that no money is saved by ordering small quantities (less than 1 pound) of the cheapest chemicals.

4. Funnel stands and test-tube racks can be made by any carpenter. Iron rods of suitable size let into the desk are excellent substitutes for retort stands.

SUGGESTIONS AS TO THE LABORATORY WORK.

1. The laboratory course should be designed to increase the pupil's interest in his work, to increase his power to *see*, *think*, and *do* for himself, and to make him acquainted with the chemicals, methods of manipulation, reactions, and laws, at first hand.

2. Have the pupil keep a laboratory note book, and insist on *neatness* and on *clearness*, and *that all entries shall be made when the experiment is performed*.

3. The attention of the teacher must be given repeatedly to each individual student while in the laboratory.

4. Some problems—the more the better, usually—should accompany the course in chemistry. These problems should always be practical and may be made more of a laboratory than a class room exercise.

5. Try to get the pupil to recognize the various chemicals, precipitates, etc., with which he deals. It is not only an excellent training but likely later to prove of some benefit.

6. Sacrifice some of the experiments "in the book" for some more nearly *home-made*. The added interest will repay the trouble.

7. Make the student think, but do not expect him to rediscover chemical laws, or to prove them. A little consideration of *any* law will probably show you that you could not, if turned loose in the best chemical laboratory in the country, prove the law in six months. Let the experiments illustrate the laws; they will help the student to remember and to understand them.

8. Do not expect the pupil always to draw *your* conclusion, *without your assistance*, from an experiment assigned by *you*.

TIME TO BE ALLOTTED TO THE COURSE IN CHEMISTRY.

As to the time to be devoted to a study of chemistry, a hard and fast rule is certainly neither possible nor desirable. In the opinion of the writer, in a general way it may be said that the high school pupil should be required to devote *at least* one-fifth¹ of his entire time to the "Science" group of studies, using that word to include physiography (physical geography), astronomy, botany (agriculture), zoology (physiology and hygiene), physics, and chemistry. Further, that a certain portion (say one-fifth) of the high school hours should be elective, thus enabling science, language, history, etc., to be further emphasized.

The conference on physics, chemistry, and astronomy (see report of the Committee of Ten) recommended that 200 hours (periods) of the high school course be devoted to chemistry. While this ideal might be kept in view, it will probably be found difficult in most high schools to arrange for more required work than 3 periods a week for one year to be devoted to chemistry alone. There is a great advantage in making the laboratory period a double period.

So far as the teaching of chemistry itself is concerned, it can doubtless be carried on with greater satisfaction if the course is placed in the last year of the high school, and this is the most logical position. But some knowledge of chemistry is almost essential in certain parts of other science courses. Also, physics demands such mathematical training that some are desirous of postponing this study also to the last year of the high school. For these reasons chemistry is sometimes taught before physics has been studied.

SUGGESTIONS AS TO TEXT-BOOKS AND REFERENCE BOOKS.

A text-book should be chosen with reference both to the *teacher* and to the *pupil*, and I can not, therefore, recommend the "best" text-book for use. The text-books differ not only as regards *style*, *clearness*, and *amount of subject-matter introduced*, but also they vary greatly in the emphasis placed on the *descriptive* side of chemistry (the facts), as opposed to the *generalizations* (the theories and laws) underlying the facts. Also they vary in the emphasis placed on the *scientific* as opposed to the *practical* side of chemistry. Let teachers note these differences and select a book suitable for their purpose.

The chapters on chemistry in Bert's *First Steps in Scientific Knowledge*

¹ This view is very conservative. The *joint conference* of the conferences on Physics, Chemistry, and Astronomy, on Natural History, and on Geography recommended that at least one-fourth of the high school course should be devoted to these subjects. See Report of Committee of Ten, 1894. Since that time public opinion has laid greatly additional emphasis upon their value.

(Lippincott Co.), and Higgin's *First Science Book* (Ginn & Co.), are suitable for the grammar school or the first year of the high school. These chapters should not take the place of a course in chemistry.

The following list of text-books is given with the desire to aid in the difficult task of selecting the proper book from among the many that are published:

Very elementary books:

Ostwald & Morse: *Elementary Modern Chemistry* (Ginn & Co.).

Clarke & Dennis: *Elementary Chemistry* (American Book Co.).

Avery: *School Chemistry* (American Book Co.).

More advanced books and yet books distinctly suitable for high schools are:

Brownlee, Fuller, Hancock, Sohon, Whitsett: *First Principles of Chemistry* (Allyn & Bacon).

Godfrey: *Elementary Chemistry* (Longmans, Green & Co.).

Jones: *Elements of Inorganic Chemistry* (Macmillan Co.).

Remsen: *An Introduction to the Study of Chemistry* (Henry Holt & Co.).

McPherson & Henderson: *Elementary Study of Chemistry* (Ginn & Co.).

All of these books except the one by Brownlee, etc., contain laboratory exercises, or the laboratory exercises are published in a separate manual.

If the text-book adopted does not sufficiently emphasize the practical side of chemistry the teacher should not hesitate to draw material for an occasional lesson from the reference books mentioned below:

Lassar-Cohn: *Chemistry in Daily Life* (Lippincott Co.).

Bailey: *Text-book of Sanitary and Applied Chemistry* (Macmillan Co.).

Dodd: *Chemistry of the Household* (American School of Home Economics, Chicago, Ill.).

Thorp: *Outlines of Industrial Chemistry* (Macmillan Co.).

A valuable list of publications for free distribution, including many on different phases of applied chemistry (foods, soils, fertilizers, etc.), can be obtained from the Secretary of Agriculture, Washington, D. C. Also a list of similar publications for sale at a nominal sum can be obtained from the Superintendent of Documents, Washington, D. C.

The list of reference books given could be indefinitely extended. The free use of reference books in all branches should be encouraged as much as possible.

From the second annual report of the State Inspector of Public High Schools of North Carolina it would seem that chemistry was taught during the session of 1908-1909 in only 6 of the 160 public high schools, and to only 104 out of the 5,282 pupils. Other sciences make a much better, though as yet a very poor, showing. Much might be said in excuse, something, perhaps in defense, of these facts. The important point is to change them. Any discussion of the situation and any suggestions leading to its improvement will be greatly appreciated by the Inspector of Public High Schools or by the writer.

CHAPTER XII.

HELPFUL BOOKS FOR HIGH SCHOOL TEACHERS

THE WORK OF THE TEACHER.—To help the young soul; to add energy, inspire hope, and blow the coals into a useful flame; to redeem defect by a new thought, by firm action; that is the work of divine men.—*Emerson*.

No progressive high school teacher can afford to lag behind his fellows in professional preparation. If he is really interested in the great business of educating, he will find time, however burdensome and exacting his classroom duties may be, to read and study some of the masterpieces of educational literature. If he is a thoughtful teacher, he will want to know certainly the leading facts of educational history and the main outlines of educational theory; he will form some acquaintance with the great educational reformers of the past and with the leaders of educational thought of the present; he will not be content to remain ignorant of educational conditions existing in other countries and in other States of his own country; he will need the help and inspiration that come from a knowledge of these things, and without this knowledge he and his classes will too often blunder along in darkness when they ought to be walking in the light. There is no excuse for the enlightened teacher today who repeats the mistakes and blunders of the teacher of a century ago. It is his imperative duty to keep abreast of the best educational thought and practice of his time. This duty he owes to himself, to his pupils, and to the State. In order to do this he must become well read in educational literature.

Every high school teacher should begin as early as possible to get together for himself a small collection of helpful books. He should always have access to several high school texts on each subject in addition to those employed for class use.

The following list is by no means complete. Scores of other valuable and helpful books might be included, but it is impossible to give the favorites of all teachers, for books differ as do people.

Books marked with an asterisk are recommended as especially helpful. These should be purchased first if the teacher is forming a professional library.

A helpful little pamphlet that every high school teacher should have is *A Professional Library for Teachers in Secondary Schools* by Dr. H. W. Chase, of the University of North Carolina, and published as Extension Bulletin No. 1 by the University. This may be had for the asking.

HISTORY OF EDUCATION.

*Brown's *The Making of Our Middle Schools* (Longmans).

*Browning's *Educational Theories* (A. S. Barnes & Co.).

Davidson's *A History of Education* (Scribner).

De Guimps's *Pestalozzi, His Life and Work* (Appleton).

Dexter's *A History of Education in the United States* (Macmillan).

Graves's *History of Education* (Macmillan).

*Kemp's *History of Education* (Lippincott).

Misawa's *Modern Educators and Their Ideals* (Appleton).

- *Monroe's *History of Education* (Macmillan).
 Page's *Froebel, The Man and His Work* (Milton Bradley & Co.).
 *Painter's *A History of Education*—Revised Edition (Appleton).
 *Quick's *Educational Reformers* (Appleton).
 Seeley's *History of Education* (American Book Co.).
 Winship's *Great American Educators* (American Book Co.).

THEORY OF EDUCATION.

- Bagley's *The Educative Process* (Macmillan).
 Comenius's *The School of Infancy* (Heath).
 *Dewey's *The School and Society* (University of Chicago Press).
 Froebel's *The Education of Man* (Appleton).
 Hall's *Youth—Its Education, Regimen and Hygiene* (Appleton).
 *Hanus's *Educational Aims and Educational Values* (Macmillan).
 Horace Mann's *Lectures on Education* (Lee & Shepard).
 James's *Psychology*—Briefer Course (Holt).
 Pestalozzi's *Leonard and Gertrude* (Heath).
 Rousseau's *Emile* (Appleton).
 *Spencer's *Education* (Appleton).

PRINCIPLES AND METHODS.

- Boyer's *Principles and Methods of Teaching* (Lippincott).
 *Bryan's *The Basis of Practical Teaching* (Silver).
 *De Garmo's *Principles of Secondary Education* (Macmillan).
 *De Garmo's *The Essentials of Method* (Heath).
 Horne's *Psychological Principles of Education* (Macmillan).
 *Hughes's *Froebel's Educational Laws for all Teachers* (Appleton).
 *McMurry's *The Elements of General Method* (Macmillan).
 *McMurry's *The Method of the Recitation* (Macmillan).
 *McMurry's *How to Study and Teaching How to Study* (Houghton, Mifflin Company).
 O'Shea's *Dynamic Factors in Education* (Macmillan).
 *Parker's *Talks on Pedagogics* (A. S. Barnes & Co.).
 Roark's *Method in Education* (American Book Co.).
 Roark's *Psychology in Education* (American Book Co.).
 *Thorndike's *Principles of Teaching* (A. G. Seiler, N. Y.).

ORGANIZATION, ADMINISTRATION, MANAGEMENT, AND SUPERVISION.

- Bagley's *Classroom Management* (Macmillan).
 Ballou's *High School Organization* (World Book Co.).
 *Brown's *The American High School* (Macmillan).
 *Chancellor's *Our Schools, Their Administration and Supervision* (Heath).
 *Davis' *High School Courses of Study* (World Book Co.).
 *Gilbert's *The School and Its Life* (Silver).
 *Hollister's *High School Administration* (Heath).
 *Hughes's *Mistakes in Teaching* (A. S. Barnes & Co.).
 *Johnston's *High School Education* (Scribner).
 *Johnston's *The Modern High School* (Scribner).
 McMurry's *How to Conduct the Recitation* (A. S. Barnes & Co.).
 Sachs's *The American Secondary School* (Macmillan).

HELPFUL BOOKS ON ENGLISH.

- Bates's *Talks on the Writing of English* (Houghton, Mifflin Co.).
 *Bates's *Talks on the Study of Literature* (Houghton, Mifflin Co.).
 *Brooks and Hubbard's *Composition-Rhetoric* (American Book Co.).
 Burt's *Literary Landmarks* (Houghton, Mifflin Co.).
 *Carpenter, Baxter and Scott's *The Teaching of English* (Longmans).
 *Chubb's *The Teaching of English* (Macmillan).
 Colby's *Literature and Life in School* (Houghton, Mifflin Co.).
 *Heydrick's *How to Study Literature* (Hinds & Noble).
 McMurry's *Special Method in the Reading of the English Classics* (Macmillan).
 *Palmer's *Self-Cultivation in English* (Houghton, Mifflin Co.).
 Scott and Denney's *Composition-Literature* (Allyn & Bacon).
 Whitcomb's *The Study of a Novel* (Heath).
 Woodward's *English in the Schools* (Heath).

GEOGRAPHY.

- *Brigham's *Geographic Influences in American History* (Ginn & Co.).
 Carpenter's *Geographical Readers* (American Book Co.).
 Guyot's *The Earth and Man* (American Book Co.).
 *Hodges' *Nature Study and Life* (Ginn).
 *Parker's *How to Study Geography* (Appleton).
 *Redway's *Teacher's Manual of Geography* (Heath).
 *Redway's *New Basis of Geography* (Macmillan).
 Sutherland's *The Teaching of Geography* (Scott, Foresman & Co.).

HISTORY AND CIVICS.

- Barnes's *Studies in Historical Method* (Heath).
 *Bourne's *The Teaching of History and Civics* (Longmans).
 Elson's *History of the United States*—One Vol. Ed.—(Macmillan).
 *Hart's *Source Book of American History* (Macmillan).
 James and Sanford's *Government in State and Nation* (Scribner).
 *Mace's *Method in History* (Ginn & Co.).
 *Report of the Committee of Seven: *History in Schools* (Macmillan).

FOREIGN LANGUAGE.

- *Bennett and Bristol's *The Teaching of Greek and Latin* (Longmans).
 *Report of the Committee of Twelve: *Modern Languages* (Heath).

MATHEMATICS.

- Heath's *Mathematical Monographs* (Heath).
 *Smith's *The Teaching of Elementary Mathematics* (Macmillan).

MISCELLANEOUS.

- Bailey's *The Nature Study Idea* (Doubleday, Page & Co.).
 *Barry's *The Hygiene of the School Room* (Silver).
 Black's *The Practice of Self-Culture* (Macmillan).
 *Butler's *The Meaning of Education* (Macmillan).
 Clarke's *Self-Culture* (J. K. Osgood & Co.).
 Curtis's *Play and Recreation* (Ginn).

- *Davenport's *Education for Efficiency* (Heath).
- *Dresslar's *School Hygiene* (Macmillan).
- Dutton's *Social Phases of Education in the School and the Home* (Macmillan).
- Emerson's *Education* (Houghton, Mifflin Co.).
- *Hanus's *A Modern School* (Macmillan).
- Harris's *Moral Education in the Public Schools* (Steiger, N. Y.).
- Hughes's *Dickens as an Educator* (Appleton).
- Hoyt's *The World's Painters and their Pictures* (Ginn & Co.).
- *James's *Talks on Psychology and Life's Ideals* (Holt).
- *Kern's *Among Country Schools* (Ginn & Co.).
- Larned's *A Primer of Right and Wrong* (Houghton, Mifflin Co.).
- Palmer's *The Ideal Teacher* (Houghton, Mifflin Co.).
- *Raper's *Wealth and Welfare* (Macmillan).
- *Report of the Committee of Ten (American Book Co.).
- *Wilson's *Pedagogues and Parents* (Holt).
- Winship's *Horace Mann, Educator* (New England Pub. Co.).

CHAPTER XIII.

THE HIGH SCHOOL PLANT

The following plans and designs for the high school building, teachers' home, and dormitories for boys and girls are reproduced from the pamphlet entitled, *Plans for Public School Houses*, prepared by Mr. Frank Thomson, architect for the State Department of Education, and published by the Department. This pamphlet is to be had for the asking. Every principal should write for a copy.

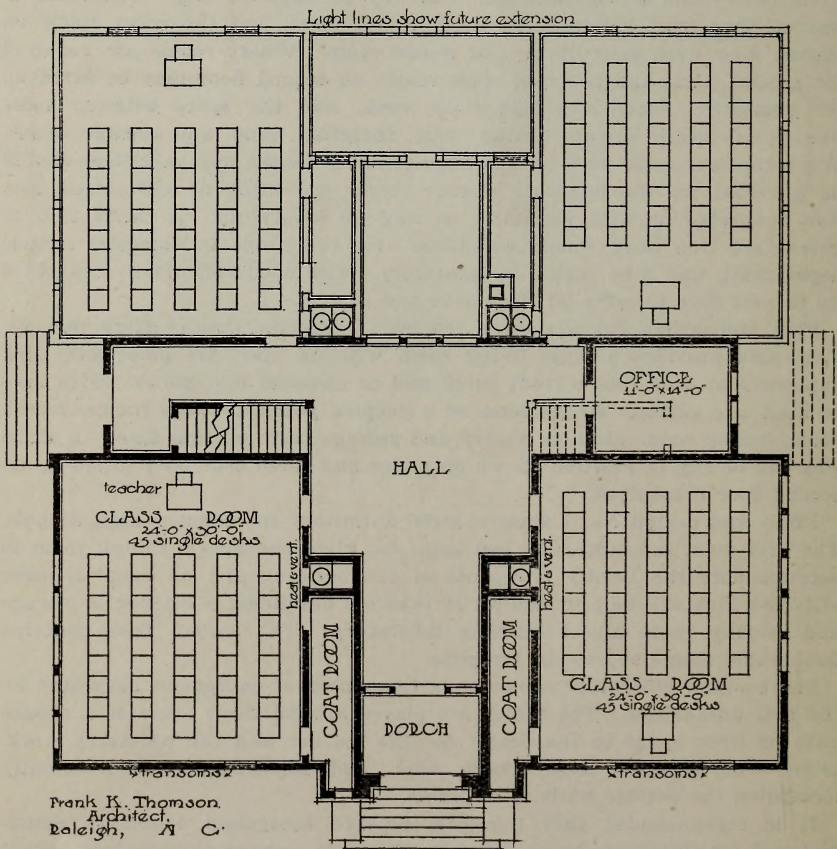
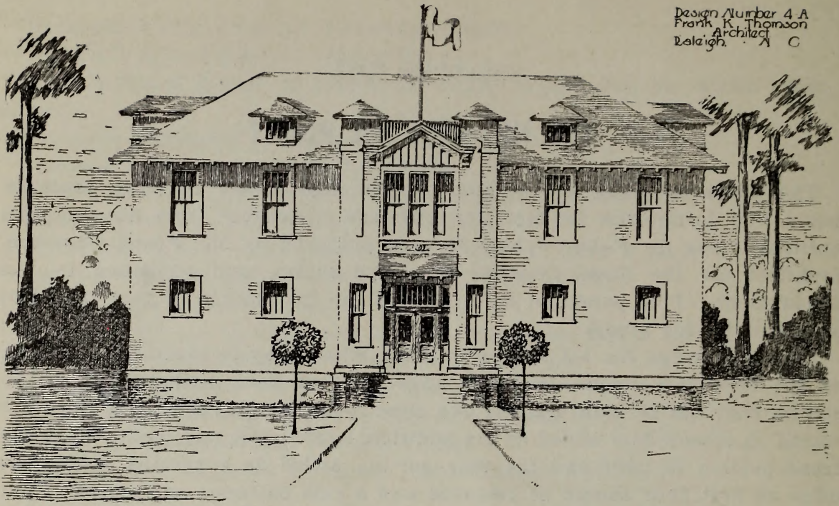
Plan and design No. 4-A show a building which may be erected as a whole, or the two class rooms, hall and office on first floor, and auditorium on second floor can be built and the two class rooms on first floor and two class rooms on second floor added as the additional rooms are required. When the front portion is built and the rear portion added as suggested above, the office on first floor should be removed and a side entrance and stairway put in to correspond to entrance and stairway on opposite side. The room at rear of first floor hall may be used for an office, and the room above on second floor used as a library, or music room. Where rooms are required for special work, the two rear class rooms on second floor may be fitted up for domestic science and laboratory work, and the space between same used for domestic science dining room, reception room, and storage rooms. When the rooms are used in this manner, brick smoke and vent flues should be provided for the domestic science room, and brick or galvanized iron flue, connected up with ventilator on roof for laboratory. A russia iron or galvanized iron hood should be placed over the range in domestic science department, and over tables in laboratory. The hoods should be connected up to vent flues to carry off the smoke and gases.

Plan and design No. 5 show a teacher's home for County High Schools. This plan provides a large living room with an open fire place and book cupboards at each side, a front porch and an enclosed rear porch, which may be used as a summer dining room or a sleeping porch, two bed rooms, a bath room, dining room, kitchen, pantry and storage room on first floor. A stairway can be run in position shown on plans, and three bed rooms fitted up on second floor if required.

Plans and design No. 7 show a girls' dormitory for country high schools. The first floor, in addition to bedrooms for girls, contains a dining room to accommodate the twenty occupants of the building and an equal number of boys which will be provided for in separate buildings; a kitchen, a storage and serving room and a cooking laboratory. The second floor contains double and single bed rooms for girls.

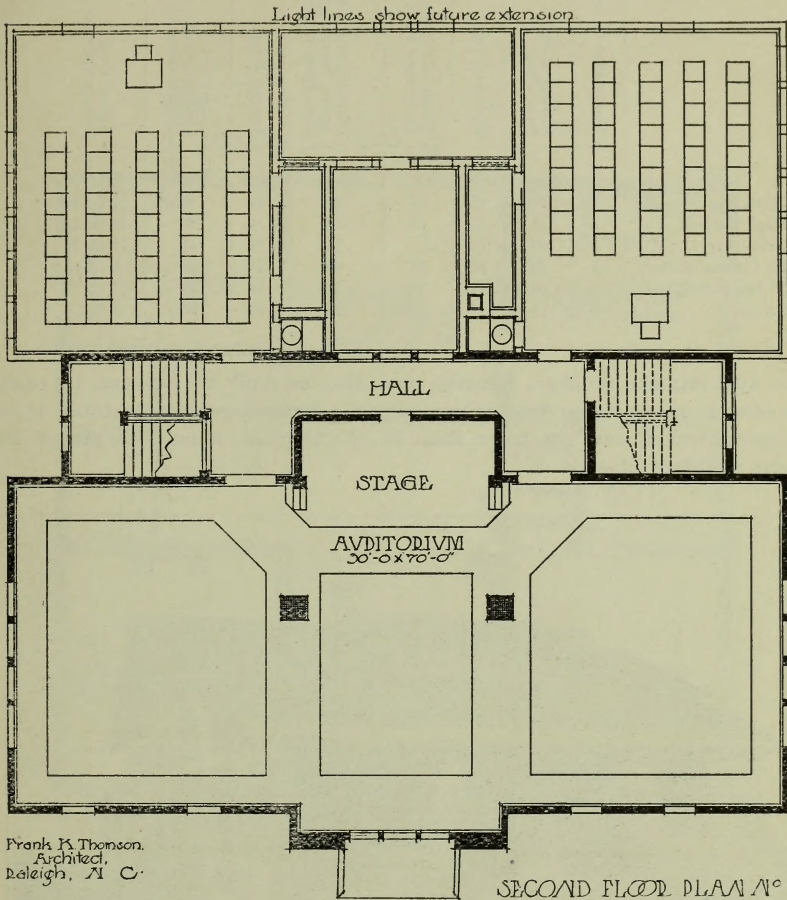
The cooking laboratory shows an arrangement of equipment suggested by the best authorities. The tables are placed around three sides of a square with an open space in the center for the teacher and the necessary work-table. The teacher's desk, range, sink, and cupboards are conveniently located on the outside walls of the room.

It is recommended that Domestic Science equipment especially manufactured for this work be provided in the same manner that modern school equipment would be provided in classrooms.



FIRST FLOOR PLAN NO. 4A.

Plans and design No. 8 show a one-story two-room dormitory to accommodate four boys, two boys in each room. One or more buildings can be erected as the growth of the institution may demand.



COST OF BUILDING.

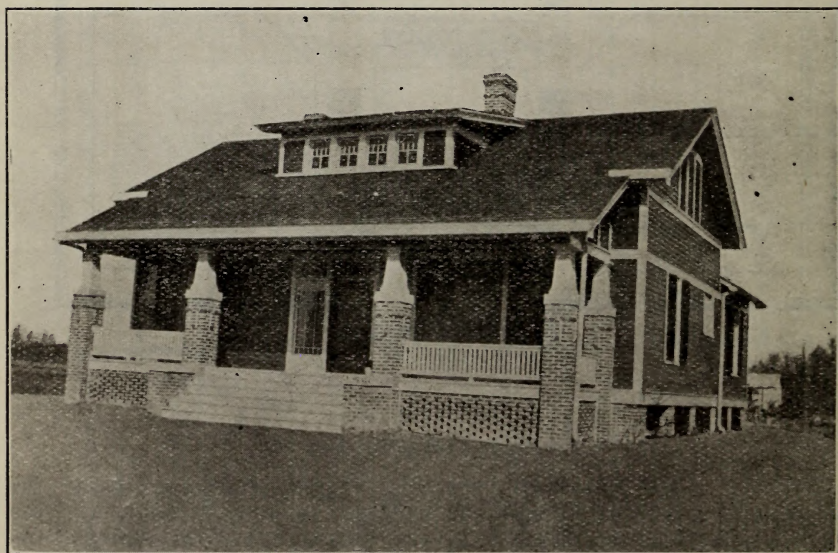
The cost of the buildings illustrated will vary greatly, owing to the difference in the price of labor and materials in different sections of the State, the distance materials will have to be hauled, and the ability of the contractors' bidding to handle the work economically. They will cost no more than poorly arranged buildings of the same size and construction.

In comparing contract prices with the cost of buildings already erected, it will be well to examine carefully the specifications and working drawings, and note the materials and construction called for.

The classrooms shown are planned to use standard school desks. The following table giving the dimensions:

	No. or Size of Desk	Height of Seat from Floor	Width of Top	Height of Top of Desk from Floor	Distance of Desks Apart, Measuring from Back to Back	Length Single	Length Double and Double Separate	Age of Pupil Occupying Seat
		INCH	INCH	INCH	INCH	INCH	INCH	
Normal.....	1	17	15	30	28	24	40	16 to 21
High School.....	2	16	15	28	28	24	40	14 to 18
Grammar.....	3	15	13		25	21	38	11 to 15
1st Intermediate.....	4	13½	13	24	25	21	38	9 to 13
2d Intermediate.....	5	12½	11	23	22	18	36	7 to 10
Primary.....	6	11	11	22	22	18	36	5 to 8

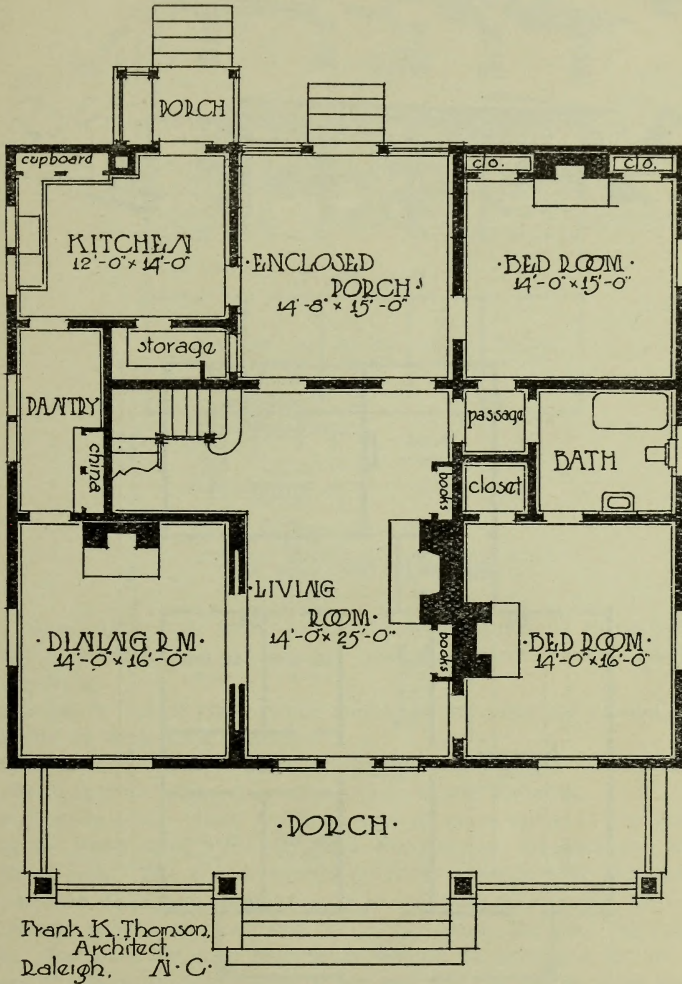
The approximate number, location and size of desk to be used in each classroom is marked on floor plans. Single desks of the adjustable type are recommended, and not more than 45 single desks should be placed in any one standard class room.



TEACHER'S HOME, DESIGN NO. 5.

Ceilings.—In order to give the required cubic contents to each pupil, the ceilings in the standard class rooms should be not less than twelve feet, six inches high. With this height ceiling, a standard class room, 24 x 30 feet in dimensions, will afford 200 cubic feet of air, and 16 square feet of floor space for each pupil.

Lighting.—As noted above the light, according to the best authorities should come from the left side of the pupil only, and the glass surface should equal from one-sixth to one-fourth the floor area of the room. The windows should be arranged close together with narrow mullions, which

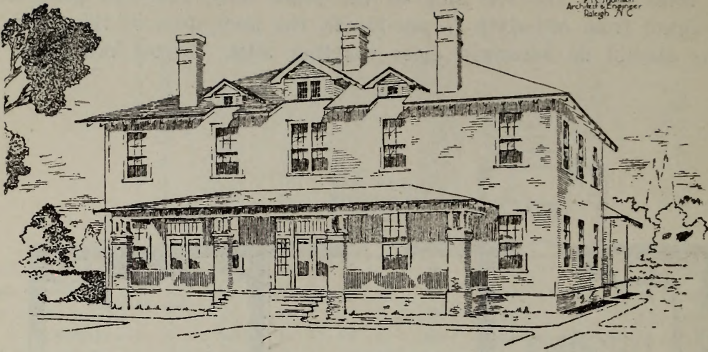


TEACHER'S HOME FOR COVADY HIGH SCHOOL.

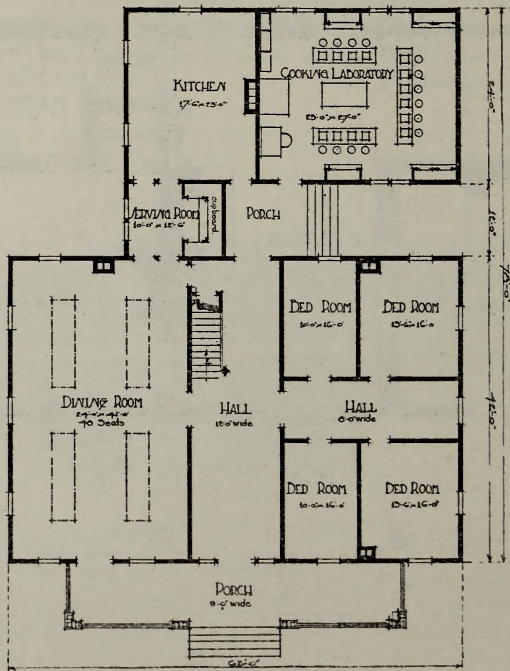
will not obstruct the light, or cast shadows in the room. The windows should also be placed well toward the rear of the room, so that the light will not be in the faces of the children on the front seats.

Transoms.—It is thought desirable in our Southern climate to place at least two transoms or short windows in the end of each class room to afford

DORMITORY FOR GIRLS
COUNTY HIGH SCHOOL
Arch. F. K. Thomson
Raleigh, N.C.



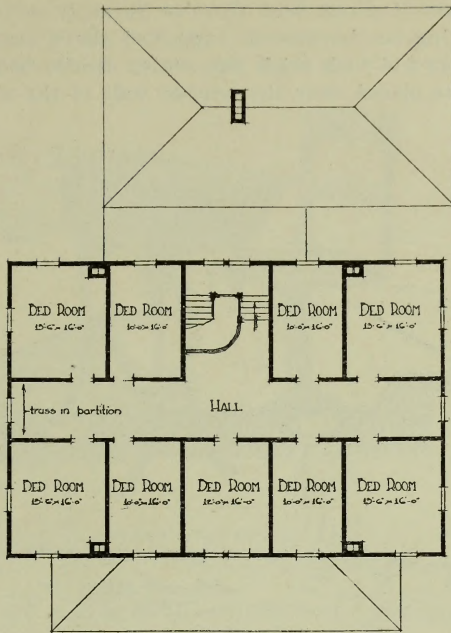
PLAN No. 7.



FIRST FLOOR PLAN

DORMITORY FOR GIRLS COUNTY HIGH SCHOOL
F. K. Thomson Architect & Engineer Raleigh, N.C.

cross ventilation during the summer months. Where the transoms come in the front wall of the class rooms, they should be covered with heavy dark colored shades.



SECOND FLOOR PLAN
DORMITORY FOR GIRLS COUNTY HIGH SCHOOL
F. K. Thomson, Architect & Engineer Raleigh N. C.

The main class room windows should be set three or three and one-half feet above the floor, and the window head should come within twelve inches of the ceiling.

Transoms in end of class rooms should be set near the ceiling, or so that heads line up with main windows.

The inside sills or stool of all transoms should be set at an angle sloping inwards to prevent lodgment of dirt and facilitate cleaning.

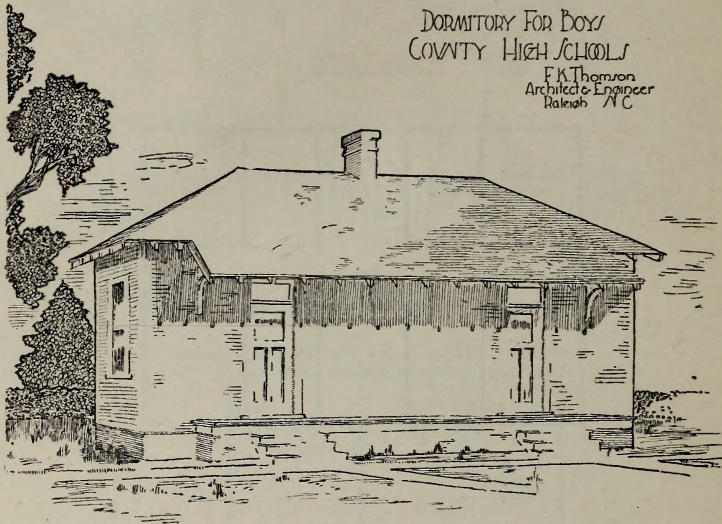
Blackboards.—The blank walls on one or more sides of the school room should be fitted with slate or good composition blackboards, with chalk trough at base. The boards should be from three to four and one-half feet high, and set from two feet one inch to two feet four inches above the floor for primary pupils, and two feet six inches above the floor for intermediate pupils. For plan No. 3, a blackboard should be arranged for on the inner surface of the rolling partitions, to be used for the center class room.

HEATING AND VENTILATION.

For heating the smaller buildings, a jacketed stove or ventilating heater is recommended. A number of heaters of this type have been placed on the market, among them being the heater manufactured by the Waterman-Waterbury Company, of Buffalo, New York. This heater gave satisfactory results, in comparison with other heaters tested.

The construction and operation of these heaters is generally as follows:

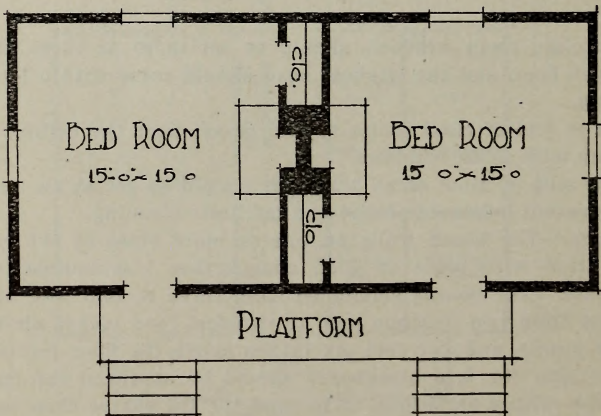
The heater consists of a cast iron stove or furnace, surrounded by a heat proof casing, resting on the floor or supported above same. The heater is connected into a 12 x 16 inch brick flue, which carries both smoke and foul air. The heater is placed near the outside wall of the class room, with a



DORMITORY FOR BOYS
COUNTY HIGH SCHOOLS

F. K. Thomson
Architect & Engineer
Raleigh, N. C.

DESIGN No. 8.

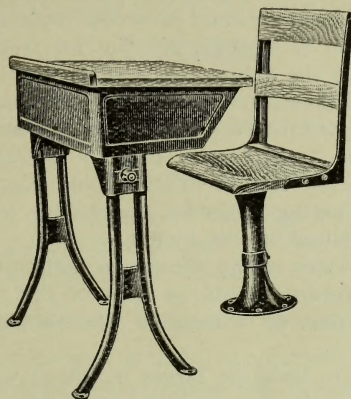


PLAN No. 8—BOYS' DORMITORY.

fresh air duct leading from a grating in the wall to the base of the heater. This duct carries the outside air to and discharges it over the hot surface of the cast iron body of the heater. A register is placed in the face of the flue near the floor line, to carry out the foul air from the room.

When a fire is started in the heater the air in the flue and the walls of the flue become heated by having the hot gases from the smoke pipe passing

through same. This causes an upward draft in the flue, which draws the foul air out of the room through the register at the floor line. As the foul air is exhausted, an equal volume of fresh air is drawn into the room



SANITARY ADJUSTABLE DESK.

Courtesy Virginia School Supply Co., Richmond, Va.

through the duct and grating in the outside wall. This air is warmed as it passes over the heater and is distributed through the room.

Some of the advantages of a heater of this type are:

A more uniform temperature in the room, the pupils near the heater being protected from the heat by the casing around same.

A constant supply of fresh air which is drawn in through the fresh air inlet and warmed by passing over the heater.

The ability to exhaust the foul or vitiated air from the room through the register at floor line in the base of the flue.

In buildings with three or more class rooms, warm air furnaces or low pressure steam heating plants may be used to advantage.

The heaters should be located in heater rooms, in basement provided with brick walls, concrete floors and ceilings protected with heavy asbestos board or sheet as a protection against fire.

When warm air or steam heating plants are installed, a system of ventilation should be provided for each class room. This may be done by providing ventilating ducts on the inside wall of the class room, and carrying the warm air pipe up inside of same for warm air heating, or, if steam is used, an aspiring coil may be placed in the ventilating ducts. This will warm the air in the ducts and cause an upward draft, which will draw the vitiated air out of the room at the floor line. The ventilating ducts may be discharged into the open attic, and a syphon ventilator placed on roof with sufficient area to exhaust same.

On the floor plans the heat and vent ducts for hot air heating are indicated on plans. The circle on the inside of the square indicates the position of the warm air pipe inside the vent duct.

For a standard class room on the first floor, the warm air pipe should be not less than 25 inches in diameter, and the vent duct, 30 x 30 inches, inside

measurement. The hot air register should be 28 x 32 inches, and the vent grille 26 x 26 inches. The warm air register should be placed about eight feet above the floor, and the vent grille near the floor line. If piping and registers of the above sizes are properly connected up to a furnace with ample grate surface, a fresh air inlet of proper area provided, and a siphon ventilator placed on roof to exhaust the foul air from the vent ducts, the heating plant will warm the building to seventy degrees and provide thirty cubic feet of fresh, warmed air per minute, for each pupil in the room, based on forty-five pupils in each standard class room.

Where a warm air or steam heating plant is installed, a complete layout and specification, covering the construction and capacity of heater to be used, size and area of piping, registers, and grilles, and the installation of the work, should be required of each bidder.

The temperature in class rooms should be maintained at from 68 to 70 degrees. A complete record should be kept of the temperature, taken at least four times each day, by a monitor who should have charge of the heater and windows.

In case it is desired to heat the larger buildings with stoves in place of furnaces, 12 x 16 inch smoke flues should be provided, located at about the same relative position as the smoke flues shown on the smaller building.

MATERIALS, DRAWINGS, ETC.

Specifications, with bill of material, for each building, will be found in pamphlet of *Plans for Public Schoolhouses* published by the State Department of Public Instruction, Raleigh.

Complete working drawings, consisting of foundation plan, plan of each floor and roof, and four elevations, all drawn to one-quarter-inch scale, with full size and large scale detail drawings fully illustrating the work to be done, can be had by addressing the architect, Frank K. Thomson, Raleigh, N. C.

With the above mentioned complete drawings, low bids can be secured from local contractors and the buildings erected without chance of mistakes and misunderstandings.

CHAPTER XIV.

THE EXAMINATION AND CERTIFICATION OF HIGH SCHOOL TEACHERS

Directions to Applicants for the High School Teacher's Certificate Issued by the State Board of Examiners.

I. APPLICATION TO BE FILED.

The law requires all applications for the High School Teacher's Certificate to be filed with the State Superintendent of Public Instruction, who, upon request, will furnish blanks for this purpose.

II. TEACHERS MUST HOLD CERTIFICATES.

The law forbids any person to teach any subject in a public high school established under the High School Act of the General Assembly of 1907 who does not hold a High School Teacher's Certificate covering that subject. The High School Teacher's Certificate will be valid for three years and subject to renewal by the State Board of Examiners upon such terms as may be prescribed by said board.

Emergency or special certificates heretofore issued will not be renewed or extended.

III. DATES AND PLACES OF EXAMINATION.

The Examinations will be held each year at all County seats in this State, in July and October, beginning on the second Thursday in each of these months. Applications for either of these examinations must be filed with the State Superintendent ten days in advance of the date set for this examination.

IV. BLANKS FURNISHED.

Blank applications for this examination will be furnished to any applicant by the State Superintendent. Every applicant is required to fill out one of these blank applications, giving the information asked for therein, and to file same with the State Superintendent. The questions for the examination will be prepared by the State Board of Examiners. This board will grade all papers and issue all certificates to successful applicants.

V. CONDITIONS.

Graduates of standard colleges applying for the High School Teacher's Certificate may, in the discretion of the State Board of Examiners, be excused from examination in certain branches pursued in college, provided they comply with the following requirements:

(1) Each applicant for the High School Teacher's Certificate without complete examination must file with his application a statement of his standing while in college, and a certificate of his graduation, signed by the president or secretary of his college.

(2) He must also furnish a statement from the registrar or other officer of

the college (blank for which will be furnished upon request), showing the amount of college work he did in the subjects on which he wishes to be excused from examination, and the grades attained.

(3) If the applicant has had experience in high school work he must furnish testimonials as to his success.

No certificate will be issued in any case except upon partial examination. The applicant must take the examination in English, Theory and Practice of Teaching (including School Management), and the General School Law (including the high school law).

The State Board of Examiners reserves the privilege of rejecting all testimonials and certificates not altogether satisfactory, and of requiring a complete examination of each applicant, if in its judgment such a course is wise.

VI. SUBJECTS OF EXAMINATION.

The examination for the High School Teacher's Certificate will cover the high school branches enumerated in groups (a), (b), (c), and (d), below. No person can be employed as principal of a public high school or as the only teacher of high school subjects in said school whose certificate does not cover all the subjects in group (a), all subjects in group (b), at least one in group (c), and at least one in group (d).

Assistant teachers who do not desire the regular High School Teacher's Certificate will be required to pass a satisfactory examination in English, Theory and Practice of Teaching (including School Management) and the General School Law, and such other subjects in groups (b), (c), and (d) as they will be required to teach.

(a) *English*: (Including Grammar and standard college entrance requirements).

Theory and Practice of Teaching. Books recommended on Secondary Education (or Theory and Practice of Teaching). (1) *The American High School*, by Brown (*Macmillan*), Chapters II-XII. (2) *The Educational Resources of Village and Rural Communities*, by Hart (*Macmillan*). (3) *High School Administration*, by Hollister (*Heath*).
School Law.

(b) *American History.*

English History.

Arithmetic.

Algebra.

Geometry.

(c) *Latin* (Including Grammar, Cæsar, Cicero, Virgil).

Greek (Including Grammar and translations).

French (Including Grammar and translations).

German (Including Grammar and translations).

(d) *Elementary Physics.*

Physical Geography.

Elementary Agriculture.

Elementary Botany.

Elementary Chemistry.

CHAPTER XV.

STANDARDS OF ACCREDITING AS DEFINED BY THE SOUTHERN COMMISSION ON ACCREDITED SCHOOLS

1. No school shall be accredited which does not require for graduation the completion of a four-year high school course of study embracing fourteen units as defined by this Association. A unit represents a year's study in any subject in a secondary school constituting approximately a quarter of a full year's work. More than twenty periods per week should be discouraged.

2. The minimum scholastic attainment of three-fourths of all secondary school teachers of academic subjects in any accredited school on the Southern list shall be equivalent to graduation from a college belonging to the Association of Colleges and Secondary Schools of the Southern States, or a college approved by the Commission. It is strongly advised that this attainment include, or be supplemented by, special study of the content and pedagogy of the subject taught.

3. The number of daily periods of class instruction given by any teacher should not exceed five periods per day; and the Commission will scrutinize with extreme care any school in which instructors teach as many as six daily periods.

4. The laboratory and library facilities shall be adequate for the needs of instruction in the courses taught.

5. The location and construction of the buildings, the lighting, heating, and ventilation of the rooms, the nature of the lavatories, corridors, water supply, school furniture, apparatus, and methods of cleaning shall be such as to insure hygienic conditions for both pupils and teachers.

6. The efficiency of instruction, the acquired habits of thought and speech, the general intellectual and moral tone of a school are paramount factors and, therefore, only schools which rank well in these particulars, as evidenced by rigid, thorough-going, sympathetic inspection, shall be considered eligible for the list.

7. The Commission will decline to consider any school whose teaching force consists of fewer than three teachers of academic subjects giving their full time to high school instruction. When local conditions warrant the introduction of the so-called vocational subjects, such as agriculture, manual training, household arts, and commercial subjects, the Commission will hold that a sufficient number of teachers must be added to provide adequately for such instruction.

8. No school shall be considered unless the regular annual blank furnished for the purpose shall have been filled out and placed on file with the inspector. In case of schools having twelve or more teachers, a complete report on teachers once in three years will be sufficient, but full data relative to changes must be presented annually.

9. All schools whose records show an excessive number of pupils per teacher, as based on the average number belonging, even though they may technically meet all other requirements, will be rejected. The Association recognizes thirty as maximum.

10. The time for which schools are accredited shall be limited to one year, dating from the time of the adoption of the list by the Association. In every case the character of the work done by a school must be the determining factor in accrediting. By personal visits of the inspectors, by detailed reports from the principals, and by the records made by the students in colleges, the character of a school's work shall be, from time to time, determined. A school shall be removed from the accredited list for failure to maintain the above standards.

CHAPTER XVI.

PUBLIC HIGH SCHOOL LAW¹

AN ACT TO STIMULATE HIGH SCHOOL INSTRUCTION IN THE PUBLIC SCHOOLS OF THE STATE, AND TEACHER TRAINING.

The General Assembly of North Carolina do enact:

HIGH SCHOOLS MAY BE MAINTAINED NOT LESS THAN SEVEN MONTHS ANNUALLY.

SECTION 1. With the consent of the State Board of Education, the county board of education in any county may in its discretion establish and maintain, for a term of not less than *seven* school months in each school year, one or more public high schools for the county, at such place or places as shall be most convenient for the pupils entitled to attend and most conducive to the purposes of said school or schools.

HIGH SCHOOL COMMITTEE TO CONSIST OF THREE PERSONS.

SEC. 2. For each public high school established under this act a committee of three persons shall be appointed by the county board of education, who shall be known as the School Committee of.....Public High School of.....County. The powers, duties and qualifications of said committeemen shall be similar to those of other public school committeemen. They shall be appointed as follows: one for a term of two years, one for a term of four years, and one for a term of six years; and at the expiration of the term of any committeeman his successor shall be appointed for a term of six years: *Provided*, that in case of death or resignation of any committeeman his successor shall be appointed for the unexpired term only. Within two weeks after appointment the committee shall meet and elect a chairman and a secretary and enter upon the performance of their duties: *Provided further, that the board of trustees or school committee of any chartered school receiving aid under section six of this act shall serve as the high school committee for said school.*

RULES, REGULATIONS, AND COURSE OF STUDY.

SEC. 3. All public high schools established and maintained under the provisions of this act shall be operated by the county board of education, under such general rules and regulations as may be prescribed by the State Board of Education. The courses of study for such high schools and the requirements for admission to them shall be prescribed by the State Superintendent of Public Instruction.

INSPECTION, CERTIFICATES, AND MINIMUM SALARY OF TEACHERS.

SEC. 4. It shall be the duty of the county board of education to locate all high schools established under this act, to furnish the State Superintendent of Public Instruction with such information relative to said schools as he may require, and to make such local rules and regulations for the conduct of said

¹ Changes in the Public High School Law made by the General Assembly of 1913 are indicated by italics.

schools as may be necessary: *Provided*, all public high schools established and aided under this act shall be subject to such inspection as may be directed by the State Superintendent of Public Instruction and shall make such reports as shall be required by him: *Provided further*, that no one shall teach in any public high school that receives State funds under this act who does not hold a high school teacher's certificate from the State Board of Examiners, who shall have power to prescribe a standard of scholarship and examination for same; and *Provided further*, that no one shall be employed as teacher in such high school without the approval and recommendation of the county superintendent. The minimum salary of any public high school teacher holding such certificate and employed as high school teacher in such high school shall be forty dollars per school month.

HIGH SCHOOLS AIDED MUST HAVE THREE TEACHERS.

SEC. 5. No public high school shall be established or maintained under this act in connection with any public elementary school having an annual school term of less than seven months; and every public elementary school operated in connection with a public high school established under this act shall have at least two teachers giving their full time to instruction in the branches of study required to be taught in the public elementary schools of the State; and no public high school shall be entitled to the benefits of this act that does not have at least one duly licensed high school teacher giving his full time to instruction in the high school branches as outlined by the State Superintendent of Public Instruction: *Provided*, that this section shall not be construed to prevent the principal of a public high school from serving as principal of the public elementary school operated in connection therewith to the extent of exercising supervisory and disciplinary functions over said public elementary school.

[Each school must have at least two teachers in addition to the high school teacher.]

SEC. 6. (Substitute for.) Public high schools shall not be established and aided under this act in towns or cities of more than twelve hundred inhabitants, except as is hereinafter provided in this section: *Provided*, that the county board of education may approve for the purposes of this act one regularly organized town or city high school of standard grade and may enter into agreement or contract with the board of trustees or committee of said high school whereby students of high school age and grade residing outside the limits of said high school district and public school teachers of the county, may be permitted to attend for the full term each year said high school free of tuition. But no such contract or agreement shall entitle such high school to the benefits of this act until said contract or agreement shall have been approved by the State Board of Education. And when such contract or agreement shall have been approved by the State Board of Education said town or city high school shall be subject to the provisions and entitled to the benefits of this act: *Provided further*, that said town or city high school shall maintain an average daily attendance for the full term of at least ten high school students from outside the local district.

CONDITIONS OF STATE AID.

SEC. 7. The county superintendent of schools in any county in which said public high school or high schools shall be established shall give due notice of the same to the State Board of Education before any State funds shall be appropriated for the support of said school or schools after the recommendation and location of a public high school have been approved by the State Board of Education, and when the county treasurer of any county shall certify to the State Superintendent of Public Instruction that as much as two hundred and fifty dollars has been placed to the credit of any public high school established and inspected as provided for in this act, thereupon a State warrant shall be issued upon requisition of the State Superintendent of Public Instruction for two hundred and fifty dollars and sent to the treasurer of the county in which such high school is located, to be placed to the credit of said high school and paid out exclusively for the support of said high school on the warrant of the high school committee, approved by the county superintendent of schools. The treasurer of each county in which such public high school or schools shall be established shall keep a separate account of the public high school fund, and at the end of each school year he shall make to the State Superintendent of Public Instruction and to the county board of education a report of all receipts and disbursements of said fund.

MAXIMUM STATE AID FIVE HUNDRED DOLLARS AND NUMBER OF SCHOOLS AIDED IN ONE COUNTY LIMITED TO FOUR.

SEC. 8. If a larger amount than two hundred and fifty dollars be provided by taxation or by private donation or by local appropriation, or otherwise, for the support of any public high school established and maintained under the provisions of this act, then the State shall contribute a like amount: *Provided*, that the State shall not contribute more than five hundred dollars in any one school year for the support of any one high school: *Provided, further*, that not more than four public high schools in any one county shall be entitled under the provisions of this act to receive State funds.

NO SCHOOLS AIDED IN TOWNS OF MORE THAN ONE THOUSAND TWO HUNDRED.

SEC. 9. *Every public high school receiving State aid under this act shall maintain an average daily attendance of at least ten high school students for the required term, and any public high school making an average daily attendance of less than ten for the required term shall not be entitled to receive State aid under this act; and every public high school receiving the maximum State aid allowed under this act shall maintain for the required term an average daily attendance of at least twenty, and any public high school making for the required term an average daily attendance of less than twenty shall have its apportionment from the State reduced proportionately.*

SUM OF SEVENTY-FIVE THOUSAND DOLLARS ANNUALLY APPROPRIATED.

SEC. 10. The sum of seventy-five thousand dollars, or so much thereof as may be necessary, is hereby annually appropriated for the purposes of high school instruction and teacher training provided for in this act. The State Board of Education shall have the power to fix such rules and regulations, in accordance with the provisions of this act, as may be necessary for the proper distribution of this fund.

[Sections 11 to 18, inclusive, relate only to the East Carolina Teachers' Training School.]

SEC. 19. That this act shall be in force from and after its ratification.

In the General Assembly read three times and ratified, this the 8th day of March, A. D. 1907.

1907, c. 820; 1909, c. 525; 1911, c. 135; 1913, c. 149.

CHAPTER XVII.

GUILFORD COUNTY FARM LIFE SCHOOL LAW¹

Made to Apply to All Counties in the State.

AN ACT TO PROMOTE THE TEACHING OF AGRICULTURE AND DOMESTIC SCIENCE IN
THE PUBLIC HIGH SCHOOLS OF GUILFORD COUNTY.

The General Assembly of North Carolina do enact:

AGRICULTURAL INSTRUCTION AND TRAINING IN DOMESTIC SCIENCE.

SECTION 1. That there shall be maintained in one or more of the public high schools of Guilford County, complying with the provisions of this act as hereinafter set forth, a department of agricultural instruction, and a department of training in domestic science and home economics in order to better prepare the boys and girls of said county for farm life and home-making.

BOARD OF TRUSTEES.

SEC. 2. That the said school or schools shall be under the control and management of a board of trustees consisting of the members of the board of education of said county and the chairman and secretary of the board of trustees of each high school in which such departments are established.

SELECTION OF SCHOOL.

SEC. 3. That after due advertisement inviting bids from the public high schools of said county now in existence or hereafter created, the County Board of Education of Guilford County shall designate the place or places at which such agricultural or domestic science work shall be established. In designating a school, the said county board of education shall take into consideration the financial aid offered for a maintenance and equipment, desirability and suitability of location: *Provided, however,* that no such department shall be established in a school which is located in a town of more than one thousand inhabitants, nor within two miles of the corporate limits of any city or town of more than five thousand inhabitants.

MAINTENANCE OF SCHOOL, PROVISIONS, ETC.

SEC. 4. That for the maintenance of said school or schools, the County Board of Education of Guilford County shall provide annually out of the public school fund, or by donation or local tax, not exceeding twenty-five hundred (\$2,500) dollars: *Provided, however,* that the present average school term of the county shall not be shortened by the appropriation herein designated. Any school applying for the benefit to be derived under this act shall first provide a building with recitation rooms, laboratories, and apparatus necessary for efficient instruction in the prescribed subjects of study and such dormitory buildings as the county board of education of said county may require, and a farm of not less than ten acres of good arable

¹ Farm-Life Schools may also be established under the general Farm-Life School Law, chapter 84, Public Laws 1911.

land, said land to be situated not more than one mile from the school buildings: *Provided, however,* that before the County Board of Education of Guilford County shall designate any school as a place at which the agricultural and domestic science work shall become a part of the school curriculum, it shall first submit to the State Superintendent of Public Instruction for his inspection and approval the equipment provided for said school.

PURPOSE OF SCHOOL AND COURSE OF STUDY.

SEC. 5. That the purposes of said school or schools are to give to the boys and girls such preparation as is now given in the said county public high schools, and in addition to that to give to the boys training in agricultural pursuits and farm life, and to prepare the girls for home-making and home-keeping. The course of study for the said school or schools shall be subject to the approval of the State Superintendent of Public Instruction and an advisory board of farm-life schools to be appointed by him.

FACULTY AND SCHEDULE OF WORK.

SEC. 6. That the teacher or teachers of the public high school, the teacher of agriculture, and the teacher of domestic science shall constitute the faculty of the county high school, who shall arrange the weekly schedule of work and submit such weekly schedule to the County Superintendent of Education of Guilford County for his approval.

APPROPRIATION BY STATE, PROVISIONS AND TERMS.

SEC. 7. That upon its being made to appear to the State Board of Education that Guilford County has complied with all the provisions of this act for establishment, maintenance and equipment of an agricultural department and a domestic science department in connection with one or more of the public high schools of the said county, it shall appropriate and pay to the County Board of Education of Guilford County for such purpose an amount equal to that appropriated and furnished by the county of Guilford for said work: *Provided, however,* that said appropriation by the State Board of Education shall not exceed the sum of twenty-five hundred (\$2,500) dollars annually for the maintenance of said work in said county, *to be paid by the State Treasurer out of funds appropriated for the maintenance of county farm-life schools by chapter eighty-four of the Public Laws of one thousand nine hundred and eleven.* That any money that is now or may hereafter be appropriated by the General Assembly of North Carolina, the State Board of Education, or other state authority for agricultural or domestic science education, a part of which appropriation would, except for this act, be appropriated to Guilford County absolutely, or upon a contingency or contingencies, then and in that event such appropriation which would go to Guilford County shall be turned over to the County Board of Education of Guilford County to aid in the carrying out of the provisions of this act. That compliance with the provisions of this act by the authorities of Guilford County shall be sufficient to entitle the county of Guilford to its proportion of any appropriation of money already made or which may hereafter be made for training in the science of agriculture or domestic science. The State Superintendent of Public Instruction shall issue a requisition on the

State Auditor for the amount so apportioned to Guilford County and he shall issue his warrant to the county treasurer of said county, and the money shall be placed by the said treasurer to the credit of the school or schools of Guilford County in which said agricultural and domestic science work is being conducted: *Provided, however*, that all money thus placed to their credit shall be used exclusively for the purpose of instruction in agriculture and domestic science.

AUTHORITY OF HIGH SCHOOL PRINCIPAL.

SEC. 8. That nothing in this act shall be construed to lessen the power and authority of the principal of the high school, but the instructors in the various departments shall be considered members of the faculty of which the high school principal is head.

QUALIFICATION OF TEACHERS.

SEC. 9. That no person shall be employed as teacher in agriculture or domestic science in the school or schools herein provided for unless the applicant has furnished to the trustees satisfactory evidence of a liberal English education, and in addition thereto special preparation and fitness for the specific branches to be taught, said qualifications to be passed upon by the County Superintendent of Guilford County, and if approved, submitted to the State Superintendent of Public Instruction for his approval. In addition to the above requirements the said person shall hold a high school teacher's certificate on all required subjects except Latin, Greek, and Modern Languages.

STUDENTS FROM OTHER COUNTIES.

SEC. 10. That the board of trustees of the school or schools herein provided for is authorized and empowered to admit students from other counties of the State to said school or schools, upon payment of such tuition charges as said board of trustees may fix, but all students who are residents of Guilford County shall be admitted to any of said schools without charge for tuition: *Provided, however*, that there shall be no discrimination against students coming from other counties in the charges fixed for board and incidentals.

AGRICULTURAL FARM LIFE AND EXTENSION WORK.

SEC. 11. That it shall be part of the duty of the teachers of agriculture and domestic science to conduct agricultural farm life and extension work in Guilford County in coöperation, as far as possible, with such work carried on in said county by the State Department of Agriculture, the North Carolina College of Agriculture and Mechanic Arts, and the United States Department of Agriculture; to hold township and district meetings in various parts of Guilford County from time to time, for farmers and farmers' wives; to coöperate with the county superintendent of education of said county and with the commissioner of agriculture, if such officer exists, in stimulating, directing and supervising practical farm life work in the public high school and the elementary schools of said county, and in providing instruction through the teachers' association and through a special short course of study at the schools where agriculture and domestic science instruction is given for the public school teachers of the said county.

THIS ACT MADE TO APPLY TO ANY COUNTY OF NORTH CAROLINA.

SEC. 12. This act shall apply to Guilford County, *and to any other county of the State of North Carolina complying with the conditions herein required of Guilford County: Provided, that no other county shall use, for the purposes herein designated, any part of the funds provided by the State and county for the maintenance of public schools until after a six months school term shall have been provided out of said funds in every district of said county.*

SEC. 13. That this act shall be in force from and after its ratification.

Ratified this the 1st day of March, 1911.

Amendments ratified the 10th day of March, 1913.

1911, c. 449; 1913, c. 105.

